

DRAFT



PERMIT NUMBER

LA0082511

AI No.: 6164

OFFICE OF ENVIRONMENTAL SERVICES
Water Discharge Permit

Pursuant to the Clean Water Act, as amended (33 U.S.C. 1251 et seq.), and the Louisiana Environmental Quality Act, as amended (La. R. S. 30:2001 et seq.), rules and regulations effective or promulgated under the authority of said Acts, and in reliance on statements and representations heretofore made in the application, a Louisiana Pollutant Discharge Elimination System permit is issued authorizing

Westlake Petrochemicals LP
 Ethylene Production Facility
 Post Office Box 2449
 Sulphur, Louisiana 70664

Type Facility: Ethylene production facility

Location: 900 Highway 108 in Sulphur
 Calcasieu Parish

Receiving Waters: Calcasieu River via Indian Marais

to discharge in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I and II (as applicable) attached hereto.

This permit and the authorization to discharge were effective on February 1, 2004, and shall expire five (5) years from the original effective date of the permit.

This permit was not previously modified.

This modification shall become effective on _____

Issued on _____

Chuck Carr Brown, Ph.D.
 Assistant Secretary

PART I

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PHASE I (*6)

During the period beginning the effective date and lasting through completion of the installation of the Outfall 001 sampling station (*1) the permittee is authorized to discharge from:

Outfall 001, the continuous combined discharge of Outfalls 101, 201, and 301.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>		<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
<u>CONVENTIONAL AND NONCONVENTIONAL</u>	STORET Code	(lbs/day, UNLESS STATED) (mg/L, UNLESS STATED)		Other Units	
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow-MGD	50050	Report	Report	---	---
BOD ₅	00310	209	528	---	---
TSS	00530	338	953	---	---
Free Available Chlorine	50064	0.8	2.0	---	---
<u>METALS AND CYANIDE(*2)</u>					
Total Copper (*3)	01042	---	1.29	---	---
Total Mercury (*3)	71900	---	0.0089	---	---
<u>VOLATILE COMPOUNDS(*2)</u>					
Acrylonitrile	34215	0.53	1.35	---	---
Benzene	34030	0.21	0.76	---	---
Bromoform	32104	---	---	Report	Report
Carbon Tetrachloride	32102	0.10	0.21	---	---
Chlorobenzene	34301	0.08	0.16	---	---
Chloroethane	34311	0.58	1.49	---	---
Chloroform	32106	0.12	0.26	---	---
1,1-Dichloroethane	34496	0.12	0.33	---	---
1,2-Dichloroethane	34531	0.38	1.18	---	---
1,1-Dichloroethylene	34501	0.09	0.14	---	---
1,2-trans-Dichloroethylene	34546	0.12	0.30	---	---
1,2-Dichloropropane	34541	0.85	1.28	---	---
1,3-Dichloropropylene	34561	0.16	0.25	---	---
Ethylbenzene	34371	0.18	0.60	---	---
Methyl Chloride	34418	0.48	1.06	---	---

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE I continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Methylene Chloride	34423	0.22	0.50	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	0.12	0.31	---	---	1/year	24-hr. Composite
Toluene	34010	0.14	0.45	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	0.12	0.30	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	0.12	0.30	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	0.12	0.30	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	0.58	1.49	---	---	1/year	24-hr. Composite
<u>ACID COMPOUNDS(*2)</u>							
2-Chlorophenol	34586	0.17	0.55	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	0.22	0.62	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	0.10	0.20	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	0.43	1.54	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	0.40	0.69	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	0.23	0.38	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	0.40	0.69	---	---	1/year	24-hr. Composite
Phenol	34694	0.08	0.14	---	---	1/week	24-hr. Composite
<u>BASE NEUTRAL COMPOUNDS(*2)</u>							
Acenaphthene	34205	0.12	0.33	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	0.12	0.33	---	---	1/year	24-hr. Composite
Anthracene	34220	0.12	0.33	---	---	1/year	24-hr. Composite
Benzo(a)anthracene(*3)	34526	---	0.087	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene(*3)	34247	---	0.087	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	0.13	0.34	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	0.12	0.33	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	0.57	1.55	---	---	1/year	24-hr. Composite
Chrysene	34320	0.12	0.33	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	0.43	0.91	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	0.17	0.25	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	0.08	0.16	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	0.45	1.13	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	0.11	0.26	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	0.15	0.32	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	0.63	1.59	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	1.42	3.57	---	---	1/year	24-hr. Composite
Fluoranthene	34376	0.14	0.38	---	---	1/year	24-hr. Composite
Fluorene	34381	0.12	0.33	---	---	1/week	24-hr. Composite
Hexachlorobenzene	39700	0.006	0.014	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	0.11	0.27	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	0.12	0.30	---	---	1/year	24-hr. Composite
Naphthalene	34696	0.12	0.33	---	---	1/week	24-hr. Composite
Nitrobenzene	34447	0.15	0.38	---	---	1/year	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE I continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Phenanthrene	34461	0.12	0.33	---	---	1/week	24-hr. Composite
Pyrene	34469	0.14	0.37	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	0.38	0.78	---	---	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from internal Outfalls 101, 201, and 301, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III, prior to combining with the waters of the Calcasieu River (*4).

FOOTNOTE(S):

(*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.

(*2) See Part II.J.

(*3) **SEE PART II.L**

(*4) Samples are to be taken at Internal Outfall 201, which includes Internal Outfall 101, and samples are to be taken at Internal Outfall 301. The daily flow discharge value at Outfall 001 is equal to the sum of the daily flow discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period. The daily mass pollutant discharge value at Outfall 001 is equal to the sum of the daily mass pollutant discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period.

(*5) Flow rate shall be reported as the sum of the Daily Maximum and Monthly Average flow rate values measured at Internal Outfalls 201 and 301

(*6) **This schedule has been completed.**

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

PHASE II - INTERIM (*6)

During the period beginning upon completion of the installation of the Outfall 001 sampling station (*1) and lasting through January 31, 2007 or until the start up of the PHASE III - Petro II Feed Flexibility and Expansion Project (*7) the permittee is authorized to discharge from:

Outfall 001, the continuous combined discharge of Outfalls 101, 201, and 301.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)				
CONVENTIONAL AND NONCONVENTIONAL	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder(*5)
BOD ₅	00310	209	528	---	---	1/week	24-hr. Composite
TSS	00530	338	953	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	0.8	2.0	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
METALS AND CYANIDE(*3)							
Total Copper (*4)	01042	---	Report	---	---	1/quarter	Grab
Total Mercury (*4)	71900	---	Report	---	---	1/quarter	Grab
VOLATILE COMPOUNDS (*3)							
Acrylonitrile	34215	0.53	1.35	---	---	1/year	24-hr. Composite
Benzene	34030	0.21	0.76	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	0.10	0.21	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	0.08	0.16	---	---	1/year	24-hr. Composite
Chloroethane	34311	0.58	1.49	---	---	1/year	24-hr. Composite
Chloroform	32106	0.12	0.26	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	0.12	0.33	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	0.38	1.18	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	0.09	0.14	---	---	1/year	24-hr. Composite
1,2-trans- Dichloroethylene	34546	0.12	0.30	---	---	1/year	24-hr. Composite
1,2-Dichloropropane	34541	0.85	1.28	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	0.16	0.25	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	0.18	0.60	---	---	1/year	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE II-INTERIM continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Methyl Chloride	34418	0.48	1.06	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	0.22	0.50	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	0.12	0.31	---	---	1/year	24-hr. Composite
Toluene	34010	0.14	0.45	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	0.12	0.30	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	0.12	0.30	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	0.12	0.30	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	0.58	1.49	---	---	1/year	24-hr. Composite
<u>ACID COMPOUNDS(*3)</u>							
2-Chlorophenol	34586	0.17	0.55	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	0.22	0.62	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	0.10	0.20	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	0.43	1.54	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	0.40	0.69	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	0.23	0.38	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	0.40	0.69	---	---	1/year	24-hr. Composite
Phenol	34694	0.08	0.14	---	---	1/week	24-hr. Composite
<u>BASE NEUTRAL COMPOUNDS(*3)</u>							
Acenaphthene	34205	0.12	0.33	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	0.12	0.33	---	---	1/year	24-hr. Composite
Anthracene	34220	0.12	0.33	---	---	1/year	24-hr. Composite
Benzo(a)anthracene(*4)	34526	0.12	0.33	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene(*4)	34247	0.13	0.34	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	0.13	0.34	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	0.12	0.33	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	0.57	1.55	---	---	1/year	24-hr. Composite
Chrysene	34320	0.12	0.33	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	0.43	0.91	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	0.17	0.25	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	0.08	0.16	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	0.45	1.13	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	0.11	0.26	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	0.15	0.32	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	0.63	1.59	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	1.42	3.57	---	---	1/year	24-hr. Composite
Fluoranthene	34376	0.14	0.38	---	---	1/year	24-hr. Composite
Fluorene	34381	0.12	0.33	---	---	1/week	24-hr. Composite
Hexachlorobenzene	39700	0.006	0.014	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	0.11	0.27	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	0.12	0.30	---	---	1/year	24-hr. Composite
Naphthalene	34696	0.12	0.33	---	---	1/week	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE II-INTERIM continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Nitrobenzene	34447	0.15	0.38	---	---	1/year	24-hr. Composite
Phenanthrene	34461	0.12	0.33	---	---	1/week	24-hr. Composite
Pyrene	34469	0.14	0.37	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	0.38	0.78	---	---	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from the new Outfall 001 sampling station, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III, prior to combining with the waters of the Calcasieu River.

FOOTNOTE(S):

- (*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) **SEE PART II.L**
- (*5) Flow rate shall be reported as the sum of the Daily Maximum and Monthly Average flow rate values measured at Internal Outfalls 201 and 301.
- (*6) **Operational PHASE at the time of permit modification.**
- (*7) The permittee shall notify this Office and the Office of Environmental Compliance in writing, at least 30 days prior to the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project. This requirement will supersede Part III.D.5.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

PHASE II - FINAL

During the period beginning upon completion of the installation of the Outfall 001 sampling station (*1) and beginning on February 1, 2007 and lasting through The startup of the PHASE III - Petro II Feed Flexibility and Expansion Project(*6) or the expiration date the permittee is authorized to discharge from:

Outfall 001, the continuous combined discharge of Outfalls 101, 201, and 301.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)				
CONVENTIONAL AND NONCONVENTIONAL	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder(*5)
BOD ₅	00310	209	528	---	---	1/week	24-hr. Composite
TSS	00530	338	953	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	0.8	2.0	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
METALS AND CYANIDE(*3)							
Total Copper (*4)	01042	---	1.29	---	---	1/quarter	Grab
Total Mercury (*4)	71900	---	0.0089	---	---	1/quarter	Grab
VOLATILE COMPOUNDS (*3)							
Acrylonitrile	34215	0.53	1.35	---	---	1/year	24-hr. Composite
Benzene	34030	0.21	0.76	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	0.10	0.21	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	0.08	0.16	---	---	1/year	24-hr. Composite
Chloroethane	34311	0.58	1.49	---	---	1/year	24-hr. Composite
Chloroform	32106	0.12	0.26	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	0.12	0.33	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	0.38	1.18	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	0.09	0.14	---	---	1/year	24-hr. Composite
1,2-trans- Dichloroethylene	34546	0.12	0.30	---	---	1/year	24-hr. Composite
1,2-Dichloropropane	34541	0.85	1.28	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	0.16	0.25	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	0.18	0.60	---	---	1/year	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE II-FINAL continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Methyl Chloride	34418	0.48	1.06	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	0.22	0.50	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	0.12	0.31	---	---	1/year	24-hr. Composite
Toluene	34010	0.14	0.45	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	0.12	0.30	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	0.12	0.30	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	0.12	0.30	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	0.58	1.49	---	---	1/year	24-hr. Composite
ACID COMPOUNDS(*3)							
2-Chlorophenol	34586	0.17	0.55	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	0.22	0.62	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	0.10	0.20	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	0.43	1.54	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	0.40	0.69	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	0.23	0.38	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	0.40	0.69	---	---	1/year	24-hr. Composite
Phenol	34694	0.08	0.14	---	---	1/week	24-hr. Composite
BASE NEUTRAL COMPOUNDS(*3)							
Acenaphthene	34205	0.12	0.33	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	0.12	0.33	---	---	1/year	24-hr. Composite
Anthracene	34220	0.12	0.33	---	---	1/year	24-hr. Composite
Benzo(a)anthracene(*4)	34526	---	0.087	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene(*4)	34247	---	0.087	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	0.13	0.34	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	0.12	0.33	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	0.57	1.55	---	---	1/year	24-hr. Composite
Chrysene	34320	0.12	0.33	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	0.43	0.91	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	0.17	0.25	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	0.08	0.16	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	0.45	1.13	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	0.11	0.26	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	0.15	0.32	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	0.63	1.59	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	1.42	3.57	---	---	1/year	24-hr. Composite
Fluoranthene	34376	0.14	0.38	---	---	1/year	24-hr. Composite
Fluorene	34381	0.12	0.33	---	---	1/week	24-hr. Composite
Hexachlorobenzene	39700	0.006	0.014	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	0.11	0.27	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	0.12	0.30	---	---	1/year	24-hr. Composite
Naphthalene	34696	0.12	0.33	---	---	1/week	24-hr. Composite

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE II-FINAL continued)

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Nitrobenzene	34447	0.15	0.38	---	---	1/year	24-hr. Composite
Phenanthrene	34461	0.12	0.33	---	---	1/week	24-hr. Composite
Pyrene	34469	0.14	0.37	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	0.38	0.78	---	---	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from the new Outfall 001 sampling station, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III, prior to combining with the waters of the Calcasieu River.

FOOTNOTE(S):

- (*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) **SEE PART II.L**
- (*5) Flow rate shall be reported as the sum of the Daily Maximum and Monthly Average flow rate values measured at Internal Outfalls 201 and 301.
- (*6) The permittee shall notify this Office and the Office of Environmental Compliance in writing, at least 30 days prior to the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project This requirement will supersede Part III.D.5.

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

PHASE III - INTERIM
(Petro II Feed Flexibility and Expansion Project)

During the period beginning upon the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project (*1) and prior to January 31, 2007 and lasting through January 31, 2007 the permittee is authorized to discharge from:

Outfall 001, the continuous combined discharge of Outfalls 101, 201, and 301.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>		<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)			
<u>CONVENTIONAL AND NONCONVENTIONAL</u>	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder(*5)
BOD ₅	00310	240	605	---	---	1/week	24-hr. Composite
TSS	00530	391	1089	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	1.0	2.5	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
<u>METALS AND CYANIDE(*3)</u>							
Total Copper (*4)	01042	---	Report	---	---	1/quarter	Grab
Total Mercury (*4)	71900	---	Report	---	---	1/quarter	Grab
<u>VOLATILE COMPOUNDS(*3)</u>							
Acrylonitrile	34215	0.60	1.52	---	---	1/year	24-hr. Composite
Benzene	34030	0.23	0.86	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	0.11	0.24	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	0.09	0.18	---	---	1/year	24-hr. Composite
Chloroethane	34311	0.65	1.69	---	---	1/year	24-hr. Composite
Chloroform	32106	0.13	0.29	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	0.14	0.37	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	0.43	1.33	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	0.10	0.16	---	---	1/year	24-hr. Composite
1,2-trans-Dichloroethylene	34546	0.13	0.34	---	---	1/year	24-hr. Composite
1,2-Dichloropropane	34541	0.96	1.45	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	0.18	0.28	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	0.20	0.68	---	---	1/year	24-hr. Composite

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE III-INTERIM continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Methyl Chloride	34418	0.54	1.20	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	0.25	0.56	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	0.14	0.35	---	---	1/year	24-hr. Composite
Toluene	34010	0.16	0.50	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	0.13	0.34	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	0.13	0.34	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	0.13	0.34	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	0.65	1.69	---	---	1/year	24-hr. Composite
ACID COMPOUNDS(*3)							
2-Chlorophenol	34586	0.20	0.62	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	0.25	0.70	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	0.11	0.23	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	0.49	1.74	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	0.45	0.77	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	0.26	0.43	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	0.45	0.78	---	---	1/year	24-hr. Composite
Phenol	34694	0.09	0.16	---	---	1/week	24-hr. Composite
BASE NEUTRAL COMPOUNDS(*3)							
Acenaphthene	34205	0.14	0.37	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	0.14	0.37	---	---	1/year	24-hr. Composite
Anthracene	34220	0.14	0.37	---	---	1/year	24-hr. Composite
Benzo(a)anthracene(*4)	34526	0.14	0.37	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene(*4)	34247	0.14	0.38	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	0.14	0.38	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	0.14	0.37	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	0.65	1.76	---	---	1/year	24-hr. Composite
Chrysene	34320	0.14	0.37	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	0.48	1.03	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	0.20	0.28	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	0.09	0.18	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	0.51	1.28	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	0.12	0.30	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	0.17	0.36	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	0.71	1.79	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	1.60	4.03	---	---	1/year	24-hr. Composite
Fluoranthene	34376	0.16	0.43	---	---	1/year	24-hr. Composite
Fluorene	34381	0.14	0.37	---	---	1/week	24-hr. Composite
Hexachlorobenzene	39700	0.006	0.014	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	0.13	0.31	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	0.13	0.34	---	---	1/year	24-hr. Composite
Naphthalene	34696	0.14	0.37	---	---	1/week	24-hr. Composite

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE III-INTERIM continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Nitrobenzene	34447	0.17	0.43	---	---	1/year	24-hr. Composite
Phenanthrene	34461	0.14	0.37	---	---	1/week	24-hr. Composite
Pyrene	34469	0.16	0.42	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	0.43	0.88	---	---	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from the new Outfall 001 sampling station, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III, prior to combining with the waters of the Calcasieu River.

FOOTNOTE(S):

- (*1) The permittee shall notify this Office and the Office of Environmental Compliance in writing, at least 30 days prior to the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project This requirement will supersede Part III.D.5.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) **SEE PART II.L**
- (*5) Flow rate shall be reported as the sum of the Daily Maximum and Monthly Average flow rate values measured at Internal Outfalls 201 and 301.

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

PHASE III - FINAL (Petro II Feed Flexibility and Expansion Project)

During the period beginning upon the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project (*1) and on February 1, 2007
and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 001, the continuous combined discharge of Outfalls 101, 201, and 301.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)				
CONVENTIONAL AND NONCONVENTIONAL	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder(*5)
BOD ₅	00310	240	605	---	---	1/week	24-hr. Composite
TSS	00530	391	1089	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	1.0	2.5	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
METALS AND CYANIDE(*3)							
Total Copper (*4)	01042	---	1.29	---	---	1/quarter	Grab
Total Mercury (*4)	71900	---	0.0089	---	---	1/quarter	Grab
VOLATILE COMPOUNDS (*3)							
Acrylonitrile	34215	0.60	1.52	---	---	1/year	24-hr. Composite
Benzene	34030	0.23	0.86	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	0.11	0.24	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	0.09	0.18	---	---	1/year	24-hr. Composite
Chloroethane	34311	0.65	1.69	---	---	1/year	24-hr. Composite
Chloroform	32106	0.13	0.29	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	0.14	0.37	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	0.43	1.33	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	0.10	0.16	---	---	1/year	24-hr. Composite
1,2-trans-Dichloroethylene	34546	0.13	0.34	---	---	1/year	24-hr. Composite
1,2-Dichloropropane	34541	0.96	1.45	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	0.18	0.28	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	0.20	0.68	---	---	1/year	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE III-FINAL continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Methyl Chloride	34418	0.54	1.20	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	0.25	0.56	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	0.14	0.35	---	---	1/year	24-hr. Composite
Toluene	34010	0.16	0.50	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	0.13	0.34	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	0.13	0.34	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	0.13	0.34	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	0.65	1.69	---	---	1/year	24-hr. Composite
ACID COMPOUNDS(*3)							
2-Chlorophenol	34586	0.20	0.62	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	0.25	0.70	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	0.11	0.23	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	0.49	1.74	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	0.45	0.77	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	0.26	0.43	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	0.45	0.78	---	---	1/year	24-hr. Composite
Phenol	34694	0.09	0.16	---	---	1/week	24-hr. Composite
BASE NEUTRAL COMPOUNDS(*3)							
Acenaphthene	34205	0.14	0.37	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	0.14	0.37	---	---	1/year	24-hr. Composite
Anthracene	34220	0.14	0.37	---	---	1/year	24-hr. Composite
Benzo(a)anthracene(*4)	34526	---	0.087	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene(*4)	34247	---	0.087	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	0.14	0.38	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	0.14	0.37	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	0.65	1.76	---	---	1/year	24-hr. Composite
Chrysene	34320	0.14	0.37	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	0.48	1.03	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	0.20	0.28	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	0.09	0.18	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	0.51	1.28	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	0.12	0.30	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	0.17	0.36	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	0.71	1.79	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	1.60	4.03	---	---	1/year	24-hr. Composite
Fluoranthene	34376	0.16	0.43	---	---	1/year	24-hr. Composite
Fluorene	34381	0.14	0.37	---	---	1/week	24-hr. Composite
Hexachlorobenzene	39700	0.006	0.014	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	0.13	0.31	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	0.13	0.34	---	---	1/year	24-hr. Composite
Naphthalene	34696	0.14	0.37	---	---	1/week	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001, PHASE III-FINAL continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Nitrobenzene	34447	0.17	0.43	---	---	1/year	24-hr. Composite
Phenanthrene	34461	0.14	0.37	---	---	1/week	24-hr. Composite
Pyrene	34469	0.16	0.42	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	0.43	0.88	---	---	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from the new Outfall 001 sampling station, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III, prior to combining with the waters of the Calcasieu River.

FOOTNOTE(S):

- (*1) The permittee shall notify this Office and the Office of Environmental Compliance in writing, at least 30 days prior to the startup of the PHASE III - Petro II Feed Flexibility and Expansion Project This requirement will supersede Part III.D.5.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) **SEE PART II.L**
- (*5) Flow rate shall be reported as the sum of the Daily Maximum and Monthly Average flow rate values measured at Internal Outfalls 201 and 301.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date and lasting through completion of the installation of the Outfall 001 sampling station (*1) (*5) the permittee is authorized to discharge from:

Outfall 201, the continuous discharge of treated process wastewater from the Petro I Unit source treatment processes, process area stormwater, chemical sewer wastewaters, cooling tower blowdown, demineralization wastewater, boiler feed regeneration water, washdown sewer wastewater, and previously monitored treated sanitary wastewater from Outfall 101.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)				
<u>CONVENTIONAL AND NONCONVENTIONAL</u>		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder
BOD ₅	00310	Report	Report	---	---	1/week	24-hr. Composite
TSS	00530	Report	Report	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	Report	Report	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
<u>VOLATILE COMPOUNDS(*3)</u>							
Acrylonitrile	34215	Report	Report	---	---	1/year	24-hr. Composite
Benzene	34030	Report	Report	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	Report	Report	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	Report	Report	---	---	1/year	24-hr. Composite
Chloroethane	34311	Report	Report	---	---	1/year	24-hr. Composite
Chloroform	32106	Report	Report	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	Report	Report	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	Report	Report	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	Report	Report	---	---	1/year	24-hr. Composite
1,2-trans-Dichloroethylene	34546	Report	Report	---	---	1/year	24-hr. Composite

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 201 continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
1,2-Dichloropropane	34541	Report	Report	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	Report	Report	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	Report	Report	---	---	1/year	24-hr. Composite
Methyl Chloride	34418	Report	Report	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	Report	Report	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	Report	Report	---	---	1/year	24-hr. Composite
Toluene	34010	Report	Report	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	Report	Report	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	Report	Report	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	Report	Report	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	Report	Report	---	---	1/year	24-hr. Composite
ACID COMPOUNDS(*3)							
2-Chlorophenol	34586	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	Report	Report	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	Report	Report	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	Report	Report	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	Report	Report	---	---	1/year	24-hr. Composite
Phenol	34694	Report	Report	---	---	1/week	24-hr. Composite
BASE NEUTRAL COMPOUNDS(*3)							
Acenaphthene	34205	Report	Report	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	Report	Report	---	---	1/year	24-hr. Composite
Anthracene	34220	Report	Report	---	---	1/year	24-hr. Composite
Benzo(a)anthracene	34526	---	Report	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene	34247	---	Report	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	Report	Report	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	Report	Report	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	Report	Report	---	---	1/year	24-hr. Composite
Chrysene	34320	Report	Report	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	Report	Report	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	Report	Report	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	Report	Report	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	Report	Report	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	Report	Report	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	Report	Report	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	Report	Report	---	---	1/year	24-hr. Composite
Fluoranthene	34376	Report	Report	---	---	1/year	24-hr. Composite
Fluorene	34381	Report	Report	---	---	1/week	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 201 continued)

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)	Monthly	Daily	Measurement Frequency	Sample Type
		Average	Maximum	Average	Maximum		
Hexachlorobenzene	39700	Report	Report	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	Report	Report	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	Report	Report	---	---	1/year	24-hr. Composite
Naphthalene	34696	Report	Report	---	---	1/week	24-hr. Composite
Nitrobenzene	34447	Report	Report	---	---	1/year	24-hr. Composite
Phenanthrene	34461	Report	Report	---	---	1/week	24-hr. Composite
Pyrene	34469	Report	Report	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	Report	Report	---	---	1/year	24-hr. Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 201, at the point of discharge from the final Petro I unit sump, prior to combining with the waters of Final Outfall 001 (*4).

FOOTNOTE(S):

- (*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) Samples are to be taken at Internal Outfall 201, which includes Internal Outfall 101. The daily flow discharge value at Outfall 001 is equal to the sum of the daily flow discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period. The daily mass pollutant discharge value at Outfall 001 is equal to the sum of the daily mass pollutant discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period.
- (*5) This schedule has been completed.

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AI No. 6164

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning upon completion of the installation of the Outfall 001 sampling station (*1) and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 201, the continuous discharge of treated process wastewater from the Petro I Unit source treatment processes, process area stormwater, chemical sewer wastewaters, cooling tower blowdown, demineralization wastewater, boiler feed regeneration water, washdown sewer wastewater, and previously monitored treated sanitary wastewater from Outfall 101.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>		<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)			
	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 201, at the point of discharge from the final Petro I unit sump, prior to combining with the waters of Final Outfall 001.

FOOTNOTE(S):

(*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date and lasting through completion of the installation of the Outfall 001 sampling station (*1) (*5) the permittee is authorized to discharge from:

Outfall 301, the continuous discharge of treated process wastewater from the Petro II Unit source treatment processes, process area stormwater, chemical sewer wastewaters, off-spec product wastewaters, cooling tower blowdown, demineralization wastewater, and washdown sewer water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)				
<u>CONVENTIONAL AND NONCONVENTIONAL</u>	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder
BOD ₅	00310	Report	Report	---	---	1/week	24-hr. Composite
TSS	00530	Report	Report	---	---	1/week	24-hr. Composite
Free Available Chlorine	50064	Report	Report	---	---	1/week	Grab
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	0(*2)	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	446(*2)	---	---	Continuous	Recorder
pH Min/Max Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
<u>VOLATILE COMPOUNDS(*3)</u>							
Acrylonitrile	34215	Report	Report	---	---	1/year	24-hr. Composite
Benzene	34030	Report	Report	---	---	1/week	24-hr. Composite
Bromoform	32104	---	---	Report	Report	1/month	24-hr. Composite
Carbon Tetrachloride	32102	Report	Report	---	---	1/year	24-hr. Composite
Chlorobenzene	34301	Report	Report	---	---	1/year	24-hr. Composite
Chloroethane	34311	Report	Report	---	---	1/year	24-hr. Composite
Chloroform	32106	Report	Report	---	---	1/year	24-hr. Composite
1,1-Dichloroethane	34496	Report	Report	---	---	1/year	24-hr. Composite
1,2-Dichloroethane	34531	Report	Report	---	---	1/year	24-hr. Composite
1,1-Dichloroethylene	34501	Report	Report	---	---	1/year	24-hr. Composite
1,2-trans-Dichloroethylene	34546	Report	Report	---	---	1/year	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 301 continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
1,2-Dichloropropane	34541	Report	Report	---	---	1/year	24-hr. Composite
1,3-Dichloropropylene	34561	Report	Report	---	---	1/year	24-hr. Composite
Ethylbenzene	34371	Report	Report	---	---	1/year	24-hr. Composite
Methyl Chloride	34418	Report	Report	---	---	1/year	24-hr. Composite
Methylene Chloride	34423	Report	Report	---	---	1/year	24-hr. Composite
Tetrachloroethylene	34475	Report	Report	---	---	1/year	24-hr. Composite
Toluene	34010	Report	Report	---	---	1/year	24-hr. Composite
1,1,1-Trichloroethane	34506	Report	Report	---	---	1/year	24-hr. Composite
1,1,2-Trichloroethane	34511	Report	Report	---	---	1/year	24-hr. Composite
Trichloroethylene	39180	Report	Report	---	---	1/year	24-hr. Composite
Vinyl Chloride	39175	Report	Report	---	---	1/year	24-hr. Composite
<u>ACID COMPOUNDS(*3)</u>							
2-Chlorophenol	34586	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dichlorophenol	34601	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dimethylphenol	34606	Report	Report	---	---	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	34657	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dinitrophenol	34616	Report	Report	---	---	1/year	24-hr. Composite
2-Nitrophenol	34591	Report	Report	---	---	1/year	24-hr. Composite
4-Nitrophenol	34646	Report	Report	---	---	1/year	24-hr. Composite
Phenol	34694	Report	Report	---	---	1/week	24-hr. Composite
<u>BASE NEUTRAL COMPOUNDS(*3)</u>							
Acenaphthene	34205	Report	Report	---	---	1/week	24-hr. Composite
Acenaphthylene	34200	Report	Report	---	---	1/year	24-hr. Composite
Anthracene	34220	Report	Report	---	---	1/year	24-hr. Composite
Benzo(a)anthracene	34526	---	Report	---	---	1/quarter	24-hr. Composite
Benzo(a)pyrene	34247	---	Report	---	---	1/quarter	24-hr. Composite
3,4-Benzofluoranthene	34230	Report	Report	---	---	1/year	24-hr. Composite
Benzo(k)fluoranthene	34242	Report	Report	---	---	1/year	24-hr. Composite
Bis(2-ethylhexyl) phthalate	39100	Report	Report	---	---	1/year	24-hr. Composite
Chrysene	34320	Report	Report	---	---	1/year	24-hr. Composite
1,2-Dichlorobenzene	34536	Report	Report	---	---	1/year	24-hr. Composite
1,3-Dichlorobenzene	34566	Report	Report	---	---	1/year	24-hr. Composite
1,4-Dichlorobenzene	34571	Report	Report	---	---	1/year	24-hr. Composite
Diethyl phthalate	34336	Report	Report	---	---	1/year	24-hr. Composite
Dimethyl phthalate	34341	Report	Report	---	---	1/year	24-hr. Composite
Di-n-butyl phthalate	39110	Report	Report	---	---	1/year	24-hr. Composite
2,4-Dinitrotoluene	34611	Report	Report	---	---	1/year	24-hr. Composite
2,6-Dinitrotoluene	34626	Report	Report	---	---	1/year	24-hr. Composite
Fluoranthene	34376	Report	Report	---	---	1/year	24-hr. Composite
Fluorene	34381	Report	Report	---	---	1/week	24-hr. Composite

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 301 continued)

Effluent Characteristic	STORET Code	Discharge Limitations		Other Units		Monitoring Requirements	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Hexachlorobenzene	39700	Report	Report	---	---	1/quarter	24-hr. Composite
Hexachlorobutadiene	34391	Report	Report	---	---	1/year	24-hr. Composite
Hexachloroethane	34396	Report	Report	---	---	1/year	24-hr. Composite
Naphthalene	34696	Report	Report	---	---	1/week	24-hr. Composite
Nitrobenzene	34447	Report	Report	---	---	1/year	24-hr. Composite
Phenanthrene	34461	Report	Report	---	---	1/week	24-hr. Composite
Pyrene	34469	Report	Report	---	---	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	34551	Report	Report	---	---	1/year	24-hr. Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 301, at the point of discharge from the final Petro II unit sump, prior to combining with the waters of Final Outfall 001 (*4).

FOOTNOTE(S):

- (*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.
- (*2) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.
- (*3) See Part II.J.
- (*4) Samples are to be taken at Internal Outfall 301, prior to combining with the effluent from Internal Outfall 201. The daily flow discharge value at Outfall 001 is equal to the sum of the daily flow discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period. The daily mass pollutant discharge value at Outfall 001 is equal to the sum of the daily mass pollutant discharge values measured at Internal Outfall 201 and Internal Outfall 301, occurring during the same 24-hour sampling period.
- (*5) **This schedule has been completed.**

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning upon completion of the installation of the Outfall 001 sampling station (*1) and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 301, the continuous discharge of treated process wastewater from the Petro II Unit source treatment processes, process area stormwater, chemical sewer wastewaters, LDPE off-spec product wastewaters, washdown sewer wastewater, cooling tower blowdown, and demineralization wastewater.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement	Sample
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Frequency	Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 301, at the point of discharge from the final Petro II unit sump, prior to combining with the waters of Final Outfall 001.

FOOTNOTE(S):

(*1) The permittee shall notify the Office of Water Resources in writing, at least 14 days prior to beginning use of the Outfall 001 sampling location.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 101, the continuous discharge of treated sanitary wastewater.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency	Sample Type
		Monthly Average	Weekly Average	Monthly Average	Weekly Average		
Flow-MGD	50050	Report	Report	---	---	1/6 months	Estimate
Fecal Coliform colonies/100 ml	74055	---	---	---	400	1/6 months	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 101, at the point of discharge from the sanitary treatment facility, prior to combining with the waters of Internal Outfall 201.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 002, the continuous discharge of steam condensate and the intermittent discharge of demineralization unit overflow, firewater pump cooling and test water, excess clarifier/utility water, and non-process area stormwater runoff from 24.28 acres of the facility.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>		<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)			
	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	1/quarter	Estimate
TOC	00680	---	---	---	50	1/quarter	Grab
Oil and Grease	03582	---	---	---	15	1/quarter	Grab
pH Min/Max Values (Standard Units)	00400	---	---	6.0 (*1) (Min)	9.0 (*1) (Max)	1/quarter	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 002, at the point of discharge into the stormwater drainage ditch that is between the road and the Styrene plant, prior to combining with the waters of the Calcasieu River via Indian Marais.

FOOTNOTE(S):

(*1) The permittee shall report on the Discharge Monitoring Reports both the minimum and maximum instantaneous pH values measured.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 003, the intermittent discharge of non-process area stormwater from 8.11 acres of the facility.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)	(lbs/day, UNLESS STATED)	(mg/L, UNLESS STATED)	Measurement Frequency(*1)	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow-MGD	50050	Report	Report	---	---	1/quarter	Estimate
TOC	00680	---	---	---	50	1/quarter	Grab
Oil and Grease	03582	---	---	---	15	1/quarter	Grab
pH Min/Max Values (Standard Units)	00400	---	---	6.0 (*2) (Min)	9.0 (*2) (Max)	1/quarter	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 003, at the point of discharge north of the co-products loading facility, prior to combining with the waters of the Calcasieu River via Indian Marals.

FOOTNOTE(S):

(*1) When discharging.

(*2) The permittee shall report on the Discharge Monitoring Reports both the minimum and maximum instantaneous pH values measured.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 004, the intermittent discharge of non-process area stormwater from 4.46 acres of the facility.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>STORET Code</u>	<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)		Measurement Frequency(*1)	Sample Type
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Flow-MGD	50050	Report	Report	---	---	1/quarter	Estimate
TOC	00680	---	---	---	50	1/quarter	Grab
Oil and Grease	03582	---	---	---	15	1/quarter	Grab
pH Min/Max Values (Standard Units)	00400	---	---	6.0 (*2) (Min)	9.0 (*2) (Max)	1/quarter	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 004, at the point of discharge south of the co-products loading facility, prior to combining with the waters of the Calcasieu River via Indian Marais.

FOOTNOTE(S):

(*1) When discharging.

(*2) The permittee shall report on the Discharge Monitoring Reports both the minimum and maximum instantaneous pH values measured.

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EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 005, the continuous discharge of steam condensate and the intermittent discharge of demineralization unit overflow, firewater pump cooling and test water, excess clarifier/utility water, and non-process area stormwater runoff from 15.67 acres of the facility.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>		<u>Discharge Limitations</u>		<u>Other Units</u>		<u>Monitoring Requirements</u>	
		(lbs/day, UNLESS STATED)		(mg/L, UNLESS STATED)			
	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	1/quarter	Estimate
TOC	00680	---	---	---	50	1/quarter	Grab
Oil and Grease	03582	---	---	---	15	1/quarter	Grab
pH Min/Max Values (Standard Units)	00400	---	---	6.0 (*1) (Min)	9.0 (*1) (Max)	1/quarter	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 005, at the point of discharge into the stormwater drainage ditch that is near the southwest corner of the Petro II unit, prior to combining with the waters of the Calcasieu River via Indian Marais.

FOOTNOTE(S):

(*1) The permittee shall report on the Discharge Monitoring Reports both the minimum and maximum instantaneous pH values measured.

Part II

Draft Modified Page 12 of 13
 Permit No. LA0082511
 AI No. 6164

OTHER REQUIREMENTS (continued)

- j. If the SWP3 proves to be ineffective in achieving the general objectives of preventing the release of significant amounts of pollutants to water of the state, then the specific objectives and requirements of the SWP3 shall be subject to modification to incorporate revised SWP3 requirements.

6. Facility Specific SWP3 Conditions:

None

O. DISCHARGE MONITORING REPORTS

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1 or an approved substitute). All monitoring reports must be retained for a period of at least three (3) years from the date of the sample measurement. The permittee shall make available to this Department, upon request, copies of all monitoring data required by this permit.

If there is a no discharge event at any of the monitored outfall(s) during the reporting period, place an "X" in the NO DISCHARGE box located in the upper right corner of the Discharge Monitoring Report.

Reporting periods shall end on the last day of the month. Monitoring results for each month shall be summarized on a Discharge Monitoring Report (DMR) Form and submitted to this Department per schedule below, postmarked no later than the 15th day of the month following each reporting period.

Permittees shall be required to submit DMR's according to the following schedule or as established in the permit:

For parameter(s) with monitoring frequency(ies) of 1/month or more frequent:

Submit DMR Postmarked by the 15th day of the following month.

For parameter(s) with monitoring frequency(ies) of 1/quarter:

<u>Monitoring Period</u>	<u>DMR Postmark Date</u>
January 1 - March 31	April 15th
April 1 - June 30	July 15th
July 1 - September 30	October 15th
October 1 - December 31	January 15th

For parameter(s) with monitoring frequency(ies) of semi-annual:

<u>Monitoring Period</u>	<u>DMR Postmark Date</u>
January 1 - June 30	July 15th
July 1 - December 31	January 15th

Part II

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OTHER REQUIREMENTS (continued)

For parameter(s) with monitoring frequency(ies) of 1/year:

Monitoring Period

DMR Postmark Date

January 1 - December 31

January 15th

Duplicate copies of DMR's (one set of originals and one set of copies) signed and certified as required by LAC 33:IX.2333.B, and all other reports (one set of originals) required by this permit shall be submitted to the Permit Compliance Unit at the following address:

Department of Environmental Quality
Office of Environmental Compliance
Permit Compliance Unit
Post Office Box 4312
Baton Rouge, Louisiana 70821-4312

NOV-30-2006 12:15

P.02/02



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

NOV 29 2006

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (7004 1160 0003 0352 5647)

Chuck Carr Brown, Ph.D.
Assistant Secretary
Office of Environmental Services
Louisiana Department of Environmental Quality
P.O. Box 4313
Baton Rouge, LA 70821-4313

Re: No Objection to Preliminary Draft Permit Major Modification
Westlake Petrochemicals, LP, Ethylene Production Facility
LPDES Permit No. LA0082511, A16164

Dear Dr. Brown:

Thank you for the opportunity to review the draft permit modification transmitted electronically from Jenniffer Sheppard, LDEQ, to Evelyn Rosborough, EPA, received on November 13, 2006. As a result of our review, the subject permit modification appears to conform to the guidelines and requirements established by the Clean Water Act and the NPDES regulations.

Thank you for your cooperation. If we may help your office achieve its permitting goals, please call me at 214-665-7170 or have your staff contact Paul Kaspar at VOICE:214-665-7459, FAX:214-665-2191, or EMAIL:kaspar.paul@epa.gov.

Sincerely,

A handwritten signature in dark ink, reading "Claudia V. Hosch", is written over the typed name.

Claudia V. Hosch
Chief
NPDES Permits Branch

cc: Jenniffer Sheppard, (LDEQ Permits Division)
Scott Guilliams (LDEQ Permits Division)

LPDES PERMIT NO. LA0082511, AI No. 6164

**LPDES FACT SHEET and RATIONALE
FOR THE DRAFT MODIFIED LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA**

- I. Company/Facility Name:** Westlake Petrochemicals, LP
Ethylene Production Facility
Post Office Box 2449
Sulphur, Louisiana 70664
- II. Issuing Office:** Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313
- III. Prepared By:** Jenniffer Sheppard
Water Permits Division
Phone #: 225-219-3138
Fax #: 225-219-3309
E-mail: jenniffer.sheppard@la.gov

Date Prepared: August 10, 2006

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX revised as of June 20, 1997.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

IV. Permit Action/Status:

A. Reason For Permit Action:

Proposed modification of an existing Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

B. LPDES permit - LPDES permit effective date: February 1, 2004
LPDES permit expiration date: January 31, 2009

C. Application received on June 9, 2006

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
LA0082511, AI No. 6164
Page 2

V. Facility Information:

- A. Location - 900 Highway 108 in Sulphur
- B. Applicant Activity -

Westlake Petrochemicals, LP, Ethylene Production Facility, is an organic chemical facility that has two ethylene production units. The facility also produces hydrogen, propylene, pyrolysis gas, pyrolysis oil, and crude butadiene.

Westlake has requested a permit modification to address proposed changes at the facility that will result in an increase from 2.8 billion pounds per year to 3.11 billion pounds per year of ethylene product (termed Petro II Feed Flexibility and Expansion Project). Additionally, Westlake will increase production of current co-products and by-products as well as produce a new co-product, pyrolysis fuel oil, which will be combusted in the Petro II Unit boilers or sold as Fuel Oil.

According to the application, the Petro II Feed Flexibility and Expansion Project will require the addition of quench oil and dilution steam processing equipment, including new towers, exchangers, pumps, and associated equipment. Three new above ground storage tanks will be required. Existing distillation towers, major compressors, and other plant equipment will also be modified to allow processing of the new liquid hydrocarbon feedstock furnace effluent. An additional cracking furnace will be added to the Petro II Unit to minimize production decreases during routine and non-routine furnace maintenance activities and to increase furnace capacity when all six furnaces are operational. An additional cooling water cell and circulation pump will be added to increase unit efficiency while cracking the current gas feedstocks as well as the proposed liquid hydrocarbon feedstock.

The proposed project will result in an increase in the discharge of cooling tower blowdown via internal Outfall 301, which discharges to final Outfall 001. Also process water which is routed to the biological treatment system and discharged via internal Outfall 301 to final Outfall 001 is projected to increase. The estimated net increase in flow at Outfall 001 is 0.2013 MGD.

This proposed modification will include two other changes. These changes are associated with storm water treatment options and the installation of a site wash out station.

- C. Technology Basis - (40 CFR Parts 401 and 405-471 have been adopted by reference at LAC 33:IX.4903)

Guideline

Organic Chemicals, Plastics,
and Synthetic Fibers (OCPSF)
Subparts F and I Guidelines

Reference

40 CFR 414 Subparts F and I

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
LA0082511, AI No. 6164
Page 3

Other sources of technology based limits:

LDEQ Stormwater Policy, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).

Louisiana Water Quality Management Plan for Sanitary Dischargers.

LDEQ Sanitary General Permits

Best Professional Judgement

- D. Fee Rate -
 - 1. Fee Rating Facility Type: major
 - 2. Complexity Type: VI
 - 3. Wastewater Type: II
 - 4. SIC code: 2869
- E. Continuous Facility Effluent Flow - 1.3599 MGD.

VI. Receiving Waters - Calcasieu River via Indian Marais

- 1. TSS (15%): 10
- 2. Average Hardness: 977.65
- 3. Critical Flow: 1476.898
- 4. Mixing zone fraction: 0.3333
- 5. Harmonic Mean Flow, cfs: 4449.273
- 6. River Basin: Calcasieu River, Segment 030301
- 7. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, and fish and wildlife propagation

Information based on the following: Water Quality Management Plan, Volume 6, 1990-1991; LAC 33.IX Chapter 11;/Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from monitoring station 094 on Bayou D' Inde in Lake Charles, as noted in the April 8, 2002 memo from Max Forbes to Tom Killeen and Bruce Fielding.

VII. Nature of Permit Modification:

- A. Outfall 001 - a new schedule has been added to address an increase in ethylene product production (referred to as PHASE III - Petro II Feed Flexibility and Expansion Project).
- B. Outfall 001 - Original LPDES permit had two schedules for this outfall. These schedules have been identified as PHASES I and II to help transition into the third schedule for the PHASE III - Petro II Feed Flexibility and Expansion Project.
- C. Outfall 001 - PHASE II and PHASE III have been given interim and final schedules to clarify pre-TMDL and post-TMDL reporting requirements. PHASE I has been completed, therefore, interim and final schedules were not included.
- D. Outfall 001 - estimated flow value for this outfall has been updated to 1.3599 MGD.

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
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- E. Internal Outfall 301 - the outfall description has been changed to incorporate washdown sewer wastewater.
- F. Internal Outfall 301 - treatment options have changed.

DEQ CHANGES

- G. The the DMR submittal schedule in Part II.O (Page 12 of 13) has been revised to clarify that DMRs must be **postmarked** by the 15th of the month.
- H. All Discharge Monitoring Reports (DMRs) are now being scanned into the LDEQ's Electronic Document Management System (EDMS) and copies to the Regional Office are no longer necessary. Therefore, Part II, Section O language (Page 13 of 13) has been modified to delete the requirement to submit duplicate copies of the DMRs to the Regional Office.

Outfall 001 (Interim and Final)

PHASE I - Operational Phase Complete

PHASE II - Current Operational Phase

- A. Type of wastewater - the continuous combined discharge of Outfalls 101, 201, and 301.
- B. Location - at the point of discharge from internal Outfalls 101, 201, and 301, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III at Latitude 30°10'40", Longitude 93°21'20".
- C. Treatment - treatment of process wastewaters consists of:
None, all treatment completed at internal outfalls.
- D. Flow - Continuous Flow, 1.1583 MGD.

Process Wastewater*	0.668 MGD
Utility Wastewater*	0.487 MGD
Sanitary Wastewater*	0.0033 MGD
Non-process Area Stormwater*	0 MGD

* Specific component waste streams are defined at Appendix A-1.

- E. Receiving waters - Calcasieu River.
- F. Basin and segment - Calcasieu River Basin, Segment 030301.

Outfall 001 (Interim and Final)

PHASE III - Petro II Feed Flexibility and Expansion Project

- A. Type of wastewater - the continuous combined discharge of Outfalls 101, 201, and 301.
- B. Location - at the point of discharge from internal Outfalls 101, 201, and 301, prior to combining with the wastewaters from Westlake Styrene and Westlake Petrochemicals III at Latitude 30°10'40", Longitude 93°21'20".

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
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- C. Treatment - treatment of process wastewaters consists of:
None, all treatment completed at internal outfalls.

- D. Flow - Continuous Flow, 1.3599 MGD.

Process Wastewater*	0.7544 MGD
Utility Wastewater*	0.6022 MGD
Sanitary Wastewater*	0.0033 MGD
Non-process Area Stormwater*	0 MGD

* Specific component waste streams are defined at Appendix A-2.

- E. Receiving waters - Calcasieu River.

- F. Basin and segment - Calcasieu River Basin, Segment 030301.

Outfall 301

- A. Type of wastewater - the continuous discharge of treated process wastewater from the Petro II Unit source treatment processes, process area stormwater, chemical sewer wastewaters, LDPE off-spec product wastewaters, washdown sewer wastewater, cooling tower blowdown, and demineralization wastewater.

- B. Location - at the point of discharge from the final Petro II unit sump at Latitude 30°10'42", Longitude 93°21'38".

- C. Treatment - treatment of process wastewaters consists of:
- Equalization.
 - CPA oil/water separator.
 - Induced gas floatation (IGF).
 - Steam stripper.
 - Dissolved air floatation (DAF).
 - Bio-oxidation.
 - Chlorine dioxide.
 - Neutralization.

Treatment - treatment of utility consists of:

- Neutralization
- Dechlorination (cooling water only)

Treatment - treatment of stormwater consists of:

- Biological treatment

- D. Flow - Continuous Flow 0.6916 MGD.

Process Wastewater*	0.2864 MGD
Utility Wastewater*	0.4052 MGD
Sanitary Wastewater*	0 MGD
Non-process Area Stormwater*	0 MGD

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
LA0082511, AI No. 6164
Page 6

* Specific component waste streams are defined at Appendices A-1 and A-2.

- E. Receiving waters - Calcasieu River via final Outfall 001.
- F. Basin and segment - Calcasieu River Basin, Segment 030301.

VIII. Permit Limit Rationale:

Westlake Petrochemicals, LP, Ethylene Production Facility is subject to Best Practicable Control Technology Currently Available (BPT) and Best Available Technology Economically Achievable (BAT) effluent limitation guidelines listed below:

Manufacturing Operation
Ethylene Manufacturing
(OCPSP Subparts F and I)

Guideline
40 CFR 414 Subparts F and I

Calculations and basis of permit limitations are found at Appendices A-1 and A-2. See below for site-specific considerations.

Site-Specific Consideration(s)

Technology Basis for Outfall 001 Phase III is the same as the Outfall 001 basis identified in the current LPDES permit, effective on February 1, 2004 (See Fact Sheet dated March 13, 2003).

A water quality screen was performed based on the Phase III operations. There were no changes to water quality parameters/limitations based on this proposed modification (See Appendices B-1 and B-2).

IX. Monitoring Frequencies:

The monitoring frequencies established for Outfall 001 Phase III are based on the Outfall 001 frequencies established in the current LPDES permit, effective on February 1, 2004 (See Fact Sheet dated March 13, 2003).

X. TMDL Waterbody (Calcasieu River):

TMDL requirements for Outfall 001 Phase III are based on the Outfall 001 requirements established in the current LPDES permit, effective on February 1, 2004 (See Fact Sheet dated March 13, 2003).

Fact Sheet and Rationale for
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XI. COMPLIANCE HISTORY/DMR REVIEW:

A compliance history and DMR review was completed covering the period of June 2004 through August 2006.

A. Inspection - June 16, 2005

The inspector reported some exceedances on the DMRs for the period of February 2004 through April 2005. No other apparent problems were noted at the time of the inspection.

B. DMR Excursions Reported

DATE	PARAMETER	OUTFALL	REPORTED VALUE	PERMIT LIMITS
12/31/04	Naphthalene	001	0.13 lbs/day Mo. Avg	0.12 lbs/day Mo. Avg
01/31/05	Naphthalene	001	0.14 lbs/day Mo. Avg	0.12 lbs/day Mo. Avg
09/30/05	pH	004	9.67 s.u. Max	9.0 s.u. max
12/31/05	Acenaphthylene	001	0.17 lbs/day Mo. Avg	0.12 lbs/day Mo. Avg
			0.36 lbs/day Dly. Max	0.33 lbs/day Dly. Max

XII. "IT" Questions - Applicant's Responses

IT Questions and Westlake Petrochemicals LP's responses are located in the permit modification application dated May 2006, Appendix C.

XIII. Endangered Species:

The receiving waterbody, Subsegment 030301 of the Calcasieu River Basin is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated September 29, 2006 from Watson (FWS) to Brown (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

XIV. Historic Sites:

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

Fact Sheet and Rationale for
Westlake Petrochemicals, LP, Ethylene Production Facility
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Page 8

XV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to modify the permit for the discharge described in the application.

XVI. Variances:

No requests for variances have been received by this Office.

XVII. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the factsheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

Modified Appendices A-1, A-2, & A-3

Revised 03/27/02

LA0082511, AI6164

Appendix A-1

Page 1

08/02/2006 Calculation of Technology Based Limits for Westlake Petrochemicals LP, Ethylene Plant

(*1)

TABLE 1

Permittee: Westlake Petrochemicals LP, Ethylene Plant

Permit Number: LA0082511, AI6164

(*3)

Fraction of OCPSF Conc. or BPJ []

Appendix Appendix A-1

Fract =0, []=1

1 BOD,avg BOD,max TSS,avg TSS,max

[] Flow Basis 1=proc, 0=all

0

Miscellaneous WW

0.5

0.5

0.5

0.5

Concentration flow, (MGD)

Misc. WW, mg/L

15

40

23

74.5

GL vs Old, 0=n, 1=y, 2=GL+Old

1

Utility WW

0.25

0.25

0.25

0.25

Outfall number

Out. 001 Phase I&II

Utility WW, mg/L

10

20

20

30

Deepwell fract., 40 CFR 122.50

Sanitary, mg/L

30

45

30

45

Michelle Gill 337-583-3159

Conversion Factors:

(*2)

(*4)

Conv mg/L-->lbs/da 8.34

OCPSF Subpart I=1, J=2

1

Metal+CN Flows:

MGD

gpm

Conv ug/L-->mg/L: 0.0001

OCPSF PROCESS FLOW CALCULATION:

MGD

gpm

Total Chromium

Conv gpm-->MGD: 0.00144

Petro 1 Sump, Process WW, 201

0.468

Total Copper

(*8)

Bio-Oxidation System, 301

0.2

Total Lead

OCPSF Alternate Flows:

MGD

Total Nickel

Conventionals:

Total Zinc

Organic Toxics:

Total Cyanide

Process Waste Water

Process Stormwater

(*5)

(*9)

OCPSF Guideline

Prod.

Prod.

Page and Table Numbering

Subpart:

1000 lbs

Fraction

1=y, 0=n

per day

of Total

1st Input Page

1

B, Rayon Fibers

2nd Input Page

0

C, Other Fibers

OCPSF

1

TOTAL PROCESS FLOW:

0.668

D,Thermoplastic Resins

SS Metals

0

E,Thermosetting Resins

Inorganic

1

F, Commodity Organics

1

Fertilizer

0

G, Bulk Organics

Pesticides

0

H, Specialty Organics

COD/TOC/O&G Tbl

0

Total:

1

BOD/TSS Tbl

1

Table Designation Sequence

(*6)

Pesticides &OCPSF

0

COD & TOC Ratios:

Average

Maximum

PestMetal 1=y,0=n

0

MISCELLANEOUS:

MGD

gpm

COD/BOD5 ratio

TOC/BOD5 ratio

Flow (*10)

COD,TOC, O&G []:

Average

Maximum

MGD COD and TOC limits, precalc

COD, mg/L

COD,Avg (lbs/day)

0

TOC, mg/L

COD,Max (lbs/day)

0

TOTAL MISCELLANEOUS FLOWS:

O&G, mg/L

TOC,Avg (lbs/day)

0

TOC,Max (lbs/day)

0

UTILITY WASTEWATER:

MGD

gpm

(*7)

Petro I, Utility, 201

0.265

INORGANIC GUIDELINES:

Petro II, CTBD, 301

0.18

New Source 1=y 0=n

0 Prod.

OCPSF BOD5

Petro II, Demin, 301

0.042

O Fraction=0, []=1

0 1000 lbs

Flow

Flow

OCPSF Fraction

40 CFR 415

per day

MGD

gpm

Avg

Max

40 CFR 415.63 Mercury

1

1

40 CFR 415.63 Diaphragm

1

1

1

1

TOTAL UTILITY WW FLOWS:

0.487

1

1

TOTAL OCPSF+BPJ FLOW:

1.1583

OCPSF+Inorganic

1.1583

LA0082511, AI6164

Appendix A-1

Page 2

Calculation of Technology Based Limits for Westlake Petrochemicals LP, Ethylene Plant

Out. 001 Phase I&II

Conventional pollutant loading calculations, BOD5 and TSS

TABLE 2

Calculation of BOD5, and TSS limits:

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF GL 40 CFR 414	BOD5	BOD5	TSS	TSS	Prod.	Prod.	Process	Conv.	BOD5	BOD5	TSS	TSS
Subpart:	Avg	Max	Avg	Max	1000 lbs	Fraction	Flow	Factor	Avg	Max	Avg	Max
	mg/L	mg/L	mg/L	mg/L	per day	of Total	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
B, Rayon Fibers							---	8.34	---	---	---	---
C, Other Fibers							---	8.34	---	---	---	---
D, Thermoplastic Resins							---	8.34	---	---	---	---
E, Thermosetting Resins							---	8.34	---	---	---	---
F, Commodity Organics	30	80	46	149		1	0.668	8.34	167.1336	445.6896	256.2715	830.0969
G, Bulk Organics							---	8.34	---	---	---	---
H, Specialty Organics							---	8.34	---	---	---	---
Total/Weighted[]	30	80	46	149		1	0.668	8.34	167.1336	445.6896	256.2715	830.0969
BPJ Sources/Guidelines	BOD5	BOD5	TSS	TSS				Conv.	BOD5	BOD5	TSS	TSS
	Avg	Max	Avg	Max			Flow	Factor	Avg	Max	Avg	Max
BPJ Sources:	mg/L	mg/L	mg/L	mg/L			(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
Sanitary WW:	30	45	30	45			0.0033	8.34	0.82566	1.23849	0.82566	1.23849
Miscellaneous:							---	8.34	---	---	---	---
Utility Wastewater:	10	20	20	30			0.487	8.34	40.6158	81.2316	81.2316	121.8474
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
BPJ Source Total:							0.4903		41.44146	82.47009	82.05726	123.0859
Other Guidelines:	BOD5	BOD5	TSS	TSS	Prod.	Flow to		Conv.	BOD5	BOD5	TSS	TSS
Inorganic	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow	Factor	Avg	Max	Avg	Max
40 CFR 415	mg/L	mg/L	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
	BOD5	BOD5	TSS	TSS	Prod.	Flow to			BOD5	BOD5	TSS	TSS
	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow		Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
							---		---	---	---	---
							---		---	---	---	---
							---		---	---	---	---
Other Guideline Total (lbs/day)							---		---	---	---	---
BOD5/TSS Grand Total (lbs/day)							1.1583		208.5751	528.1597	338.3288	953.1828

Total

Subcategory	Cyanide A		Cyanide A		Prod. Flow to 1000 lbs Tmt. Plt. per day Fraction	Cyanide A Flow (MGD)	Cyanide A		Cyanide A		
	Avg	Max	Avg	Max			Flow	Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000				lbs/day	lbs/day	lbs/day	lbs/day
					---	---	---	---	---	---	
					---	---	---	---	---	---	
					---	---	---	---	---	---	
					---	---	---	---	---	---	
					---	---	---	---	---	---	
Other Sources, BPJ (Flow Based)	Avg	Max	Avg	Max			Avg	Max	Avg	Max	
	mg/L	mg/L	mg/L	mg/L			lbs/day	lbs/day	lbs/day	lbs/day	
						---	---	---	---	---	
						---	---	---	---	---	
						---	---	---	---	---	
Total						---	---	---	---	---	

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Calculation of Technology Based Limits for Westlake Petrochemicals LP, Ethylene Plant
Out. 001 Phase I&II

TABLE 4

Calculation Summary of Conventional and Non-Conventional Limits

(*1) Parameter	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Avg lbs/day	(*8) Tech Max lbs/day	(*9) Old Tech Max0=no scr. lbs/day	(*10) Old Anti-Back Out. 001 Avg lbs/day	(*11) Old Anti-Back Out. 001 Max lbs/day	(*12) Old Anti-Back Out. 001 Avg mg/L	(*13) Old Anti-Back Out. 001 Max mg/L
								1=OldvsGL				
								2=Old+GL				
CONVENTIONAL												
BOD5				208.5751	528.1597				209	528	---	---
TSS				338.3288	953.1828				338	953	---	---
Oil and Grease				---	---				---	---	---	---
NON-CONVENTIONAL												
COD				---	---				---	---	---	---
TOC				---	---				---	---	---	---
Free Available Chlorine [*1]				0.812316	2.03079				0.8	2.0	---	---
Ammonia Nitrogen				---	---				---	---	---	---
Organic Nitrogen				---	---				---	---	---	---
Nitrate Nitrogen				---	---				---	---	---	---

Calculation Summary of Metal and Cyanide Toxic Limits

(*1)	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Avg lbs/day	(*8) Tech Max lbs/day	(*9) Old Tech Max0=no scr. lbs/day	(*10) Old Anti-Back Out. 001 Avg lbs/day	(*11) Old Anti-Back Out. 001 Max lbs/day	(*12) Old Anti-Back Out. 001 Avg mg/L	(*13) Old Anti-Back Out. 001 Max mg/L
								1=OldvsGL				
								2=Old+GL				
METALS AND CYANIDE												
Total Chromium				---	---				---	---	---	---
Total Copper				---	---				---	---	---	---
Total Lead				---	---				---	---	---	---
Total Nickel				---	---				---	---	---	---
Total Zinc				---	---				---	---	---	---
Total Mercury				---	---				---	---	---	---
Total Cyanide				---	---				---	---	---	---
Amenable Cyanide				---	---				---	---	---	---

[*1] Free Available Chlorine limit based on 0.2/0.5 mg/L concentrations used in the NPDES permit effective 12/4/89. In this permit and subsequent permits, this limit was applied to the utility wastewater streams and used utility wastewater flows in the derivation of the mass limits (see Table 3), similar to previously issued permits. This BPJ appears to be based on the Steam Electric Generating Effluent Guidelines at 40 CFR 423.

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Calculation of Technology Based Limits for Westlake Petrochemicals LP, Ethylene Plant

Out. 001 Phase I&II

Calculation of Toxic Limits, OCPSP Subpart I

TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSP Parameter	G/L Val	G/L Val	Process G/L Val	G/L Val	G/L Val	Tech Old	Tech Old	G/L-BPJ	Out. 001	Out. 001	Out. 001	Out. 001
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max	0=no scr.	Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day	1=Old vs GL 2=Old+GL	lbs/day	lbs/day	mg/L	mg/L
VOLATILE COMPOUNDS												
Acrylonitrile	0.096	0.242	0.668	0.534828	1.348211			---	0.53	1.35	---	---
Benzene	0.037	0.136	0.668	0.206131	0.757672			---	0.21	0.76	---	---
Bromoform [*1]	---	---	---	---	---			---	---	---	Report	Report
Carbon Tetrachloride	0.018	0.038	0.668	0.10028	0.211703			---	0.10	0.21	---	---
Chlorobenzene	0.015	0.028	0.668	0.083567	0.155991			---	0.08	0.16	---	---
Chloroethane	0.104	0.268	0.668	0.579396	1.49306			---	0.58	1.49	---	---
Chloroform	0.021	0.046	0.668	0.116994	0.256272			---	0.12	0.26	---	---
1,1-Dichloroethane	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
1,2-Dichloroethane	0.068	0.211	0.668	0.378836	1.175506			---	0.38	1.18	---	---
1,1-Dichloroethylene	0.016	0.025	0.668	0.089138	0.139278			---	0.09	0.14	---	---
1,2-trans-Dichloro- ethylene	0.021	0.054	0.668	0.116994	0.30084			---	0.12	0.30	---	---
1,2-Dichloropropane	0.153	0.23	0.668	0.852381	1.281358			---	0.85	1.28	---	---
1,3-Dichloropropylene	0.029	0.044	0.668	0.161562	0.245129			---	0.16	0.25	---	---
Ethylbenzene	0.032	0.108	0.668	0.178276	0.601681			---	0.18	0.60	---	---
Methyl Chloride	0.086	0.19	0.668	0.479116	1.058513			---	0.48	1.06	---	---
Methylene Chloride	0.04	0.089	0.668	0.222845	0.49583			---	0.22	0.50	---	---
Tetrachloroethylene	0.022	0.056	0.668	0.122565	0.311983			---	0.12	0.31	---	---
Toluene	0.026	0.08	0.668	0.144849	0.44569			---	0.14	0.45	---	---
1,1,1-Trichloroethane	0.021	0.054	0.668	0.116994	0.30084			---	0.12	0.30	---	---
1,1,2-Trichloroethane	0.021	0.054	0.668	0.116994	0.30084			---	0.12	0.30	---	---
Trichloroethylene	0.021	0.054	0.668	0.116994	0.30084			---	0.12	0.30	---	---
Vinyl Chloride	0.104	0.268	0.668	0.579396	1.49306			---	0.58	1.49	---	---
ACID COMPOUNDS												
2-Chlorophenol	0.031	0.098	0.668	0.172705	0.54597			---	0.17	0.55	---	---
2,4-Dichlorophenol	0.039	0.112	0.668	0.217274	0.623965			---	0.22	0.62	---	---
2,4-Dimethylphenol	0.018	0.036	0.668	0.10028	0.20056			---	0.10	0.20	---	---
4,6-Dinitro-o-cresol	0.078	0.277	0.668	0.434547	1.5432			---	0.43	1.54	---	---
2,4-Dinitrophenol	0.071	0.123	0.668	0.39555	0.685248			---	0.40	0.69	---	---
2-Nitrophenol	0.041	0.069	0.668	0.228416	0.384407			---	0.23	0.38	---	---
4-Nitrophenol	0.072	0.124	0.668	0.401121	0.690819			---	0.40	0.69	---	---
Phenol	0.015	0.026	0.668	0.083567	0.144849			---	0.08	0.14	---	---

[*1] Bromoform reporting requirements are included as a result of use of sodium hyprobomite product in the cooling water system as discussed in a letter from Youngblood (LDEQ) to Gaines (Westlake Ethylene) dated 11/14/97.

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Calculation of Technology Based Limits for Westlake Petrochemicals LP, Ethylene Plant

Out. 001 Phase I&II

Calculation of Toxic Limits, OCPSF Subpart I

TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF Parameter	G/L Val	G/L Val	Process G/L Val	G/L Val	G/L Val	Tech Old Tech Old	Anti-BackOut.	001 Out.	001 Out.	001 Out.	001 Out.	001
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max0=no scr.	Avg	Max	Avg	Max	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day1=OldvsGL	lbs/day	lbs/day	mg/L	mg/L	
							2=Old+GL					
BASE/NEUTRAL COMPOUNDS												
Acenaphthene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Acenaphthylene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Anthracene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Benzo(a)anthracene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Benzo(a)pyrene	0.023	0.061	0.668	0.128136	0.339838			---	0.13	0.34	---	---
3,4-Benzofluoranthene	0.023	0.061	0.668	0.128136	0.339838			---	0.13	0.34	---	---
Benzo(k)fluoranthene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Bis(2-ethylhexyl)- phthalate	0.103	0.279	0.668	0.573825	1.554342			---	0.57	1.55	---	---
Chrysene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
1,2-Dichlorobenzene	0.077	0.163	0.668	0.428976	0.908093			---	0.43	0.91	---	---
1,3-Dichlorobenzene	0.031	0.044	0.668	0.172705	0.245129			---	0.17	0.25	---	---
1,4-Dichlorobenzene	0.015	0.028	0.668	0.083567	0.155991			---	0.08	0.16	---	---
Diethyl phthalate	0.081	0.203	0.668	0.451261	1.130937			---	0.45	1.13	---	---
Dimethyl phthalate	0.019	0.047	0.668	0.105851	0.261843			---	0.11	0.26	---	---
Di-n-butyl phthalate	0.027	0.057	0.668	0.15042	0.317554			---	0.15	0.32	---	---
2,4-Dinitrotoluene	0.113	0.285	0.668	0.629537	1.587769			---	0.63	1.59	---	---
2,6-Dinitrotoluene	0.255	0.641	0.668	1.420636	3.571088			---	1.42	3.57	---	---
Fluoranthene	0.025	0.068	0.668	0.139278	0.378836			---	0.14	0.38	---	---
Fluorene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Hexachlorobenzene	0.015	0.028	0.668	0.083567	0.155991			---	0.08	0.16	---	---
Hexachlorobutadiene	0.02	0.049	0.668	0.111422	0.272985			---	0.11	0.27	---	---
Hexachloroethane	0.021	0.054	0.668	0.116994	0.30084			---	0.12	0.30	---	---
Naphthalene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Nitrobenzene	0.027	0.068	0.668	0.15042	0.378836			---	0.15	0.38	---	---
Phenanthrene	0.022	0.059	0.668	0.122565	0.328696			---	0.12	0.33	---	---
Pyrene	0.025	0.067	0.668	0.139278	0.373265			---	0.14	0.37	---	---
1,2,4-Trichlorobenzene	0.068	0.14	0.668	0.378836	0.779957			---	0.38	0.78	---	---

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Calculation of Technology Based Limits for Westlake Petrochemicals Corp., Ethylene Plant

Out. 001 PHASE III

Conventional pollutant loading calculations, BOD5 and TSS

TABLE 2

Calculation of BOD5, and TSS limits:

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF GL 40 CFR 414	BOD5	BOD5	TSS	TSS	Prod.	Prod.	Process	Conv.	BOD5	BOD5	TSS	TSS
Subpart:	Avg	Max	Avg	Max	1000 lbs	Fraction	Flow	Factor	Avg	Max	Avg	Max
	mg/L	mg/L	mg/L	mg/L	per day	of Total	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
B, Rayon Fibers							---	8.34	---	---	---	---
C, Other Fibers							---	8.34	---	---	---	---
D, Thermoplastic Resins							---	8.34	---	---	---	---
E, Thermosetting Resins							---	8.34	---	---	---	---
F, Commodity Organics	30	80	46	149		1	0.7544	8.34	188.7509	503.3357	289.418	937.4627
G, Bulk Organics							---	8.34	---	---	---	---
H, Specialty Organics							---	8.34	---	---	---	---
Total/Weighted[]	30	80	46	149		1	0.7544	8.34	188.7509	503.3357	289.418	937.4627
BPJ Sources/Guidelines	BOD5	BOD5	TSS	TSS				Conv.	BOD5	BOD5	TSS	TSS
	Avg	Max	Avg	Max			Flow	Factor	Avg	Max	Avg	Max
BPJ Sources:	mg/L	mg/L	mg/L	mg/L			(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
Sanitary WW:	30	45	30	45			0.0033	8.34	0.82566	1.23849	0.82566	1.23849
Miscellaneous:							---	8.34	---	---	---	---
Utility Wastewater:	10	20	20	30			0.6022	8.34	50.22348	100.447	100.447	150.6704
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
BPJ Source Total:							0.6055		51.04914	101.6855	101.2726	151.9089
Other Guidelines:	BOD5	BOD5	TSS	TSS	Prod.	Flow to		Conv.	BOD5	BOD5	TSS	TSS
Inorganic	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow	Factor	Avg	Max	Avg	Max
40 CFR 415	mg/L	mg/L	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
	BOD5	BOD5	TSS	TSS	Prod.	Flow to			BOD5	BOD5	TSS	TSS
	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow		Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
							---		---	---	---	---
							---		---	---	---	---
							---		---	---	---	---
Other Guideline Total (lbs/day)							---		---	---	---	---
BOD5/TSS Grand Total (lbs/day)							1.3599		239.8	605.0211	390.6906	1089.372

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Calculation of Technology Based Limits for Westlake Petrochemicals Corp., Ethylene Plant

Out. 001 PHASE III

Toxic pollutant loading calculations, heavy metals, FAC (Free Available Chlorine), and Cyanide

TABLE 3

40 CFR 414 OCPSF, 40 CFR 415, and 40 CFR 455 as applicable

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
Subcategory and/or Source	Chromium	Chromium	Copper	Copper	Prod. Flow to Chromium	Flow to Chromium	Copper Chromium	Chromium Chromium	Copper Chromium	Copper Chromium	Copper Chromium	Copper Chromium
	Avg	Max	Avg	Max	1000 lbs Tmt. Plt.	Flow	Flow	Avg	Max	Avg	Max	Max
	mg/L	mg/L	mg/L	mg/L	per day	Fraction	(MGD)	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day
OCPSF Subpart I +BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
	Avg	Max	Avg	Max								
	lbs/1000	lbs/1000	lbs/1000	lbs/1000								
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Total							---	---	---	---	---	---

Subcategory and/or Source	Lead	Lead	Nickel	Nickel	Prod. Flow to	Flow to	Lead	Nickel	Lead	Lead	Nickel	Nickel
	Avg	Max	Avg	Max	1000 lbs Tmt. Plt.	Flow	Flow	Avg	Max	Avg	Max	Max
	mg/L	mg/L	mg/L	mg/L	per day	Fraction	(MGD)	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day
OCPSF Subpart I +BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
	Avg	Max	Avg	Max								
	lbs/1000	lbs/1000	lbs/1000	lbs/1000								
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Total							---	---	---	---	---	---

Subcategory and/or Source	Zinc	Zinc	Cyanide	Cyanide	Prod. Flow to	Flow to	Zinc	Cyanide	Zinc	Zinc	Cyanide	Cyanide
	Avg	Max	Avg	Max	1000 lbs Tmt. Plt.	Flow	Flow	Avg	Max	Avg	Max	Max
	mg/L	mg/L	mg/L	mg/L	per day	Fraction	(MGD)	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day
OCPSF Subpart I +BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
	Avg	Max	Avg	Max								
	lbs/1000	lbs/1000	lbs/1000	lbs/1000								
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Total							---	---	---	---	---	---

Other Sources, BPJ (Flow Based)	Avg mg/L	Max mg/L	Avg mg/L	Max mg/L	Avg lbs/day	Max lbs/day	Avg lbs/day	Max lbs/day
	---				---	---	---	---
	---				---	---	---	---
	---				---	---	---	---
Total	---				---	---	---	---

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 Calculation of Technology Based Limits for Westlake Petrochemicals Corp., Ethylene Plant
 Out. 001 PHASE III

TABLE 4

Calculation Summary of Conventional and Non-Conventional Limits

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
Parameter	G/L-BPJ	G/L-BPJ	Process	G/L-BPJ	G/L-BPJ	Tech Old	Tech Old	Anti-Back	Out. 001	Out. 001	Out. 001	Out. 001
	Avg.	Max	Flow	Avg	Max	Avg	Max	0=no scr.	Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day	1=Old vs GL	lbs/day	lbs/day	mg/L	mg/L
								2=Old+GL				
CONVENTIONAL												
BOD5				239.8	605.0	211		---	240	605	---	---
TSS				390.6	906	1089	372	---	391	1089	---	---
Oil and Grease				---	---			---	---	---	---	---
NON-CONVENTIONAL												
COD				---	---			---	---	---	---	---
TOC				---	---			---	---	---	---	---
Free Available Chlorine [*1]				1.00447	2.511174			---	1.0	2.5	---	---
Ammonia Nitrogen				---	---			---	---	---	---	---
Organic Nitrogen				---	---			---	---	---	---	---
Nitrate Nitrogen				---	---			---	---	---	---	---

Calculation Summary of Metal and Cyanide Toxic Limits

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
	G/L-BPJ	G/L-BPJ	Process	G/L-BPJ	G/L-BPJ	Tech Old	Tech Old	Anti-Back	Out. 001	Out. 001	Out. 001	Out. 001
	Avg.	Max	Flow	Avg	Max	Avg	Max	0=no scr.	Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day	1=Old vs GL	lbs/day	lbs/day	mg/L	mg/L
METALS AND CYANIDE	2=Old+GL											
Total Chromium				---	---			---	---	---	---	---
Total Copper				---	---			---	---	---	---	---
Total Lead				---	---			---	---	---	---	---
Total Nickel				---	---			---	---	---	---	---
Total Zinc				---	---			---	---	---	---	---
Total Mercury				---	---			---	---	---	---	---
Total Cyanide				---	---			---	---	---	---	---
Amenable Cyanide				---	---			---	---	---	---	---

[*1] Free Available Chlorine limit based on 0.2/0.5 mg/L concentrations used in the NPDES permit effective 12/4/89. In this permit and subsequent permits, this limit was applied to the utility wastewater streams and used utility wastewater flows in the derivation of the mass limits (see Table 3), similar to previously issued permits. This BPJ appears to be based on the Steam Electric Generating Effluent Guidelines at 40 CFR 423.

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Calculation of Technology Based Limits for Westlake Petrochemicals Corp., Ethylene Plant

Out. 001 PHASE IIII

Calculation of Toxic Limits, OCPSF Subpart I

TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF Parameter	G/L Val	G/L Val	Process G/L Val	G/L Val	G/L Val	Tech Old Tech Old	G/L-BPJ	Out.	001 Out.	001 Out.	001 Out.	001
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max0=no scr.	Avg	Max	Avg	Max	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day1=OldvsGL	lbs/day	lbs/day	mg/L	mg/L	
							2=Old+GL					
VOLATILE COMPOUNDS												
Acrylonitrile	0.096	0.242	0.7544	0.604003	1.52259			---	0.60	1.52	---	---
Benzene	0.037	0.136	0.7544	0.232793	0.855671			---	0.23	0.86	---	---
Bromoform [*1]	---	---	---	---	---			---	---	---	Report	Report
Carbon Tetrachloride	0.018	0.038	0.7544	0.113251	0.239084			---	0.11	0.24	---	---
Chlorobenzene	0.015	0.028	0.7544	0.094375	0.176167			---	0.09	0.18	---	---
Chloroethane	0.104	0.268	0.7544	0.654336	1.686175			---	0.65	1.69	---	---
Chloroform	0.021	0.046	0.7544	0.132126	0.289418			---	0.13	0.29	---	---
1,1-Dichloroethane	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
1,2-Dichloroethane	0.068	0.211	0.7544	0.427835	1.327548			---	0.43	1.33	---	---
1,1-Dichloroethylene	0.016	0.025	0.7544	0.100667	0.157292			---	0.10	0.16	---	---
1,2-trans-Dichloro-ethylene	0.021	0.054	0.7544	0.132126	0.339752			---	0.13	0.34	---	---
1,2-Dichloropropane	0.153	0.23	0.7544	0.962629	1.44709			---	0.96	1.45	---	---
1,3-Dichloropropylene	0.029	0.044	0.7544	0.182459	0.276835			---	0.18	0.28	---	---
Ethylbenzene	0.032	0.108	0.7544	0.201334	0.679503			---	0.20	0.68	---	---
Methyl Chloride	0.086	0.19	0.7544	0.541086	1.195422			---	0.54	1.20	---	---
Methylene Chloride	0.04	0.089	0.7544	0.251668	0.559961			---	0.25	0.56	---	---
Tetrachloroethylene	0.022	0.056	0.7544	0.138417	0.352335			---	0.14	0.35	---	---
Toluene	0.026	0.08	0.7544	0.163584	0.503336			---	0.16	0.50	---	---
1,1,1-Trichloroethane	0.021	0.054	0.7544	0.132126	0.339752			---	0.13	0.34	---	---
1,1,2-Trichloroethane	0.021	0.054	0.7544	0.132126	0.339752			---	0.13	0.34	---	---
Trichloroethylene	0.021	0.054	0.7544	0.132126	0.339752			---	0.13	0.34	---	---
Vinyl Chloride	0.104	0.268	0.7544	0.654336	1.686175			---	0.65	1.69	---	---
ACID COMPOUNDS												
2-Chlorophenol	0.031	0.098	0.7544	0.195043	0.616586			---	0.20	0.62	---	---
2,4-Dichlorophenol	0.039	0.112	0.7544	0.245376	0.70467			---	0.25	0.70	---	---
2,4-Dimethylphenol	0.018	0.036	0.7544	0.113251	0.226501			---	0.11	0.23	---	---
4,6-Dinitro-o-cresol	0.078	0.277	0.7544	0.490752	1.7428			---	0.49	1.74	---	---
2,4-Dinitrophenol	0.071	0.123	0.7544	0.44671	0.773879			---	0.45	0.77	---	---
2-Nitrophenol	0.041	0.069	0.7544	0.25796	0.434127			---	0.26	0.43	---	---
4-Nitrophenol	0.072	0.124	0.7544	0.453002	0.78017			---	0.45	0.78	---	---
Phenol	0.015	0.026	0.7544	0.094375	0.163584			---	0.09	0.16	---	---

[*1] Bromoform reporting requirements are included as a result of use of sodium hyprobomite product in the cooling water system as discussed in a letter from Youngblood (LDEQ) to Gaines (Westlake Ethylene) dated 11/14/97.

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 Calculation of Technology Based Limits for Westlake Petrochemicals Corp., Ethylene Plant
 Out. 001 PHASE III
 Calculation of Toxic Limits, OCPSP Subpart I

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TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSP Parameter	G/L Val	G/L Val	Process	G/L Val	G/L Val	Tech Old	Tech Old	Anti-Back	Out. 001	Out. 001	Out. 001	Out. 001
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max	Out. 001	Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day	1=Old vs GL	lbs/day	lbs/day	mg/L	mg/L
								2=Old+GL				
BASE/NEUTRAL COMPOUNDS												
Acenaphthene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Acenaphthylene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Anthracene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Benzo(a)anthracene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Benzo(a)pyrene	0.023	0.061	0.7544	0.144709	0.383793			---	0.14	0.38	---	---
3,4-Benzofluoranthene	0.023	0.061	0.7544	0.144709	0.383793			---	0.14	0.38	---	---
Benzo(k)fluoranthene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Bis(2-ethylhexyl)- phthalate	0.103	0.279	0.7544	0.648045	1.755383			---	0.65	1.76	---	---
Chrysene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
1,2-Dichlorobenzene	0.077	0.163	0.7544	0.484461	1.025546			---	0.48	1.03	---	---
1,3-Dichlorobenzene	0.031	0.044	0.7544	0.195043	0.276835			---	0.20	0.28	---	---
1,4-Dichlorobenzene	0.015	0.028	0.7544	0.094375	0.176167			---	0.09	0.18	---	---
Diethyl phthalate	0.081	0.203	0.7544	0.509627	1.277214			---	0.51	1.28	---	---
Dimethyl phthalate	0.019	0.047	0.7544	0.119542	0.29571			---	0.12	0.30	---	---
Di-n-butyl phthalate	0.027	0.057	0.7544	0.169876	0.358627			---	0.17	0.36	---	---
2,4-Dinitrotoluene	0.113	0.285	0.7544	0.710962	1.793133			---	0.71	1.79	---	---
2,6-Dinitrotoluene	0.255	0.641	0.7544	1.604382	4.032977			---	1.60	4.03	---	---
Fluoranthene	0.025	0.068	0.7544	0.157292	0.427835			---	0.16	0.43	---	---
Fluorene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Hexachlorobenzene	0.015	0.028	0.7544	0.094375	0.176167			---	0.09	0.18	---	---
Hexachlorobutadiene	0.02	0.049	0.7544	0.125834	0.308293			---	0.13	0.31	---	---
Hexachloroethane	0.021	0.054	0.7544	0.132126	0.339752			---	0.13	0.34	---	---
Naphthalene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Nitrobenzene	0.027	0.068	0.7544	0.169876	0.427835			---	0.17	0.43	---	---
Phenanthrene	0.022	0.059	0.7544	0.138417	0.37121			---	0.14	0.37	---	---
Pyrene	0.025	0.067	0.7544	0.157292	0.421544			---	0.16	0.42	---	---
1,2,4-Trichlorobenzene	0.068	0.14	0.7544	0.427835	0.880837			---	0.43	0.88	---	---

APPENDIX A-3 LA0082511, AI No. 6164

Documentation and Explanation of Technology Calculations
and Associated Lotus Spreadsheet

This is a multi-sector technology spreadsheet covering the following two guidelines: 40 CFR 414, Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF). Regulations at 40 CFR 144(a)/LAC 33.IX.2361 require that technology-based permit limitations be placed in permits based on effluent limitations guidelines where applicable, on Best Professional Judgement (BPJ) in the absence of guidelines or on a combination of the two. Best Available Technology Economically Achievable (BAT) guideline factors and concentrations are used for non-conventional and toxic pollutants. In the absence of BAT, Best Conventional Pollutant Control Technology (BCT) is used for non-conventional pollutants. In the absence of either BAT or BCT, Best Practicable Control Technology (BPT) is used for conventional and non-conventional pollutants. BPT is used for conventional pollutants. New Source Performance Standards (NSPS) are used as the situation dictates, however in the case of the OCPSF guidelines, NSPS=BAT. In the absence of an applicable guideline for a particular parameter, BPJ shall be utilized. The term, "monthly average" or "average", refers to the 30-day monthly average of daily maximum values, "daily maximum" or "maximum", refers to the maximum for any one day. The term, "previous permit", refers to the most recently issued NPDES or LPDES permit. If the previous permit did not give a BPJ allowance for particular wastewater, none will be granted in the reissuance in accordance with CWA 402(o), and 40 CFR 122.44.1/LAC 33.IX.2361.L. The spreadsheet is set up in a table and column/section format. Each table represents a general category for data input or calculation points. Each reference column or section is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*10). These columns or sections represent inputs, existing data sets, calculation points, or results for determining technology based limits for an effluent of concern.

Table 1

Table 1 is the data input area for the OCPSF guidelines and the inorganic chemical guidelines, Sections (*2), (*3), (*4), (*5), (*6), (*7), (*8), (*10), and (*11). The Page and Table numbering sequence section is Section (*9) and the generalized input information is Section (*1).

(*1) General input information:

Permittee - permittee name.

Permit Number- LPDES permit number.

Appendix- Appendix designation for the header.

[1 Flow Basis 1=proc, 0=all]- if the flow basis for concentration limits is the same as the process flow in determining mass limits, then a "1" is placed in the designated cell. A "0" indicates the total outfall flow will be used in determining concentration based limits. See Concentration flow (MGD).

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Concentration flow (MGD)- flow used for calculating concentration based limits in MGD.

GL vs Old, 0=n, 1=y, 2=GL+Old- this is the anti-backsliding (40 CFR 122.44.l, LAC 33.IX.2361.L) screening designation switch. "Old" represents the previous permit limit established by Best Professional Judgement (BPJ), which is now BAT for that facility, and "GL" represents the current guideline calculation. If the screen indicates that the previously established limitation is more stringent, but there has been an increase in production, another spreadsheet can be run giving guideline allowances for the production increase by putting a "2" in the specified cell. This cell sets a default for all anti-backsliding throughout the spreadsheet, but different options can be selected on a parameter specific basis.

Outfall number- Outfall number is placed in the designated cell, the default is "Out. 001", abbreviated due to space limitations in other portions of the spreadsheet.

Deepwell fract., 40 CFR 122.50/LAC 33.IX.2371- this applies to any situation where a discharger that falls under mass based guidelines or mass based BPJ and is discharging a portion of their wastewater to a surface water receiving stream and the remaining portion to a deepwell (most common in La.), POTW, offsite disposal, etc. The facility's mass based limitations must be reduced by the fraction of water not being discharged to the surface water receiving the discharge. Flow based guideline effluent limitations and associated BPJ will receive adjustments in their source flows.

- (*2) OCPSF Flow Calculations- OCPSF flow calculations are divided into four basic categories, 1) process, 2) sanitary wastewater, 3) miscellaneous flows, and 4) utility wastewater. Additional flows may be entered as needed. Flows can either be entered as MGD or gpm units in the designated column. The process flow is used to calculate organic toxic limitations if the facility's annual production exceeds 5 million pounds per year of final product. Process flow includes flows generated by the manufacturing process, process area stormwater, and process lab water as stated in 40 CFR 414. Other flows, such as groundwater remediation wastewater, are considered as process wastewaters on a BPJ basis. Additional flows such as utility, sanitary, and miscellaneous wastewaters are used in determining additional BPJ allocations for BOD₅ and TSS limitations, but not toxics. Miscellaneous wastewater includes, but is not limited to, wastewaters from tank farms or chemical storage areas or uncontaminated stormwater. Utility wastewater includes, but is not limited to, non-contact cooling tower blowdown, boiler blowdown, filter backwash, etc.

- (*3) Fraction of OCPSF Conc. or BPJ []. Utility, Miscellaneous and other wastewaters contribute BOD₅ and TSS loadings to the process outfall if these wastewaters are discharged through the process outfall. For miscellaneous wastewaters, a BPJ determination has been made that these

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wastewaters receive 50% of the production weighted OCPSF concentrations for BOD₅ and TSS. For utility wastewaters, a BPJ determination has been made that these wastewaters receive 25% of the production weighted OCPSF concentrations for BOD₅ and TSS. Sanitary wastewaters shall receive BOD₅ and TSS allocations of 30 mg/L, average, and 45 mg/L, maximum, as treatment equivalent to secondary treatment (LAC 33.IX.711.D). Other wastewaters shall be approached on a case-by-case basis. Anti-backsliding concerns and/or a previous permit may preclude the usage of the weighted OCPSF concentrations described above. Different BOD₅ and TSS fractions may be used as the situation dictates. If the previous permit contains other concentrations, they may be utilized instead of fractions of production weighted OCPSF concentrations.

- (*4) Metal+CN Flow- The OCPSF guidelines specify that only a specific metal bearing wastestream shall receive allowances under the guideline (40 CFR 414.90, 414.100). However, through experience, it has been determined that there are several other potential sources of metals through out a facility other than from a catalyst in a metal bearing wastestream especially in an acidic wastestream. Examples of these sources include reaction vessels and equipment, piping, cooling towers, boilers, raw contaminants, etc. In consideration of these factors, the whole toxics process flow is utilized per BPJ in the calculation of metal limits unless anti-backsliding concerns (40 CFR 122.44.1, LAC 33.IX.2361.L) and/or a previous permit prescribe the use of a lesser flow. For situations where site-specific metal bearing flows (BPJ and OCPSF guideline) need to be calculated, the "Site-Specific Metal, Cyanide, and Total Residual Chlorine (TRC) Bearing Flows" table is used. Flow is entered in MGD or gpm under the specified column on the row(s) containing the metal(s) of concern.
- (*5) OCPSF Guideline Subpart- BOD₅ and TSS mass limitations are calculated using a production weighted concentration. Organic chemical production figures in 1000/lbs day or production fractions of the total may be entered on the row(s) with the indicated subpart under the designated column. The production fraction will be used more frequently as many companies consider production information confidential. If a facility manufactures under only one subpart, then the production fraction shall be unity (1).
- (*6) COD & TOC Ratios/COD, TOC, O&G []- Under the ratio section, it may be necessary to determine COD or TOC BPJ loadings based on BOD₅ limitations or loadings. The appropriate ratios are entered in the indicated cells. BPJ loadings for COD, TOC, and Oil and Grease (O&G) may also be determined on a concentration basis. Concentrations and flows are entered in the indicated cells. The ratios/concentrations are usually based on the previously issued permit, if one exists. If this is a new permit issuance or major modification involving a new unit, then the ratios/concentrations are usually based on similarly permitted facilities.
- (*7) Inorganic Effluent Guidelines (40 CFR 415)- Inorganic guideline subpart and associated production and flow are entered as indicated. Chlor-Alkali

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guidelines (40 CFR 415.63) are present by default since chlor-alkali operations are most frequently associated with the production of organic chemicals (chlorinated solvents, vinyl chloride monomer, etc.). New sources are indicated by placing a "1" or a "0" in the indicated cell. Q Fraction=0, []=1, indicates whether the BPJ BOD₅ allocation fraction is entered in terms of weighted OCPSF concentrations, indicated by a "0", or other concentration under the labeled columns, indicated by a "1". Production information is entered in terms of 1000 lbs per day. Flow is entered in MGD or gpm in the appropriate column. Other inorganic guideline input information is included on a case-by-case basis.

- (*8) OCPSF Alternate Flows- On a case-by-case basis it may be necessary to utilize an alternate flow for the calculation of the conventional pollutants BOD₅ and TSS loadings or the calculation of the organic toxic loadings. This will most commonly occur in cases where a deepwell is being eliminated. Units are in MGD.
- (*9) Page and Table numbering sequence- This section shall be used for all guideline calculations and combinations. The user can specify that the spreadsheet number the pages and tables in accordance with the guidelines/tables being used. Unused pages and tables are numbered "0". This section also controls the printing of the spreadsheet; non-numbered pages are not printed.
- (*10) Precalculated COD and TOC limits- Occasionally it may be necessary to incorporate a precalculated technology-based limit for TOC or COD based on DMR's or other sources, such as a previously issued permit. These values are entered in the designated cells.
- (*11) Inorganic Flow Sources- Although flow is not used in calculating mass limits under the inorganic effluent guidelines, these flows are sometimes used in allocating BPJ loadings or for informational purposes.

Table 2

Table 2 is a calculation table for the conventional pollutant loadings of BOD₅ and TSS utilizing guidelines and BPJ.

- (*1) The top portion of the table lists OCPSF subparts under 40 CFR 414. The bottom portion indicated by "Other Sources/Guidelines" lists non-guideline BPJ sources, sanitary wastewater, non-process area stormwater, miscellaneous wastewaters, utility wastewaters, under "Other Sources" and other contributing guidelines under "Other Guidelines".
- (*2) Average BOD₅- Average BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic allocations are made by BPJ.

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- (*3) Maximum BOD₅- Maximum BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic allocations are made by BPJ.
- (*4) Average TSS- Average BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic wastewater TSS limitations are calculated in accordance with 40 CFR 415, which are mass based effluent guidelines.
- (*5) Maximum TSS- Maximum BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic wastewater TSS limitations are calculated in accordance with 40 CFR 415, which are mass based effluent guidelines.
- (*6) Production in 1000 lbs/day- These values indicate the amount of production per subpart.
- (*7) At the top of the table, Production fraction of total. These values are based on a fraction of total OCPSF production per subpart. If all OCPSF manufacturing falls under one subpart, the fraction shall be unity (1).

At the bottom of the table, Flow to Treatment Plant Fraction. Applicable to mass-based guidelines; if a portion of a process wastewater is being injected to a deepwell, POTW, or other non-surface water source, this represents the remaining fraction being discharged to the receiving water.
- (*8) Flow- For the OCPSF guideline portion of the table (the upper portion), this is the process flow calculated in Table 1. Under "BPJ Sources/Guidelines", these are the other categorical BPJ flows calculated in Table 1. Under the "Other Guideline" section, this is the flow associated with the production under that guideline part or subpart. Flows associated with mass-based guidelines are not used in calculations.
- (*9) Conversion factor- used in conjunction with flow (MGD) for converting mg/L to lbs per day, 8.34 lbs/gallon. Mg/L is assumed to be equivalent to ppm.
- (*10) BOD₅, Average, lbs/day- For OCPSF guideline allocations the concentration in column (*2) is multiplied by the production fraction in column (*7), the flow in column (*8), the conversion factor in column (*9) yielding a monthly average BOD₅ loading applicable to that subpart. BPJ Source allocations are determined similarly to the OCPSF guideline allocations. If mass-based guidelines are being considered under Other Guidelines", the guideline factor in column (*2) is multiplied by the production value in (*6), and the flow to treatment plant fraction in column (*7) if there is deepwell, POTW, or other disposal of process wastewater not to a surface water receiving stream. Inorganic wastewaters receive a BOD₅ allocation provided that anti-backsliding does not apply. The OCPSF guideline loadings are summed on the row with the label, "Total/Weighted[]." The BPJ Sources loadings including the OCPSF BPJ loadings are summed on the row labeled, "BPJ Source Total". Other Guideline contributions are

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summed on the line labeled "Other Guideline Total (lbs/day)". The grand total is on the indicated row and this is the technology limit for Monthly Average BOD₅.

- (*11) BOD₅, Maximum, lbs/day- Similar to column (*10). See column (*10).
- (*12) TSS, Average, lbs/day- For OCPSF guideline allocations the concentration in column (*4) is multiplied by the production fraction in column (*7), the flow in column (*8), the conversion factor in column (*9) yielding a monthly average BOD₅ loading applicable to that subpart. BPJ Source allocations are determined similarly to the OCPSF guideline allocations. If mass-based guidelines are being considered under Other Guidelines", the guideline factor in column (*4) is multiplied by the production value in (*6), and the flow to treatment plant fraction in column (*7) if there is deepwell, POTW, or other disposal of process wastewater not to a surface water receiving stream. The OCPSF guideline loadings are summed on the row with the label, "Total/Weighted[]." The BPJ Sources loadings including the OCPSF BPJ loadings are summed on the row labeled, "BPJ Source Total". Other Guideline contributions are summed on the line labeled "Other Guideline Total (lbs/day)". The grand total is on the indicated row and this is the technology limit for Monthly Average TSS.
- (*13) TSS, Maximum, lbs/day- Similar to column (*12). See column (*12).

Table 3

Table 3 includes calculations for the heavy metals, Total Chromium, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Cyanide, Total Mercury, Free Available Chlorine (FAC), and Amenable Cyanide utilizing BAT, NSPS, or BPJ as indicated.

- (*1) Subcategory and/or Source- This specifies the applicable guideline subpart, subcategory, or BPJ source. When site-specific OCPSF metal limits are being calculated, the categorical source will be displayed: process wastewater, miscellaneous and utility wastewater, and non-ocpsf wastewater.
- (*2) Average (parameter) guideline factor (lbs/1000 lbs daily production), or BPJ concentration (mg/L). Parameter is the indicated metal, cyanide, or TRC. BPJ concentrations for TRC are usually 0.9 mg/L, average, from the Inorganic Chemicals Development Document (Phase I) pg. 183, EPA 440/1-82/007, associated with chlor-alkali production.
- (*3) Maximum (parameter) guideline factor (lbs/1000 lbs daily production), BPJ concentration (mg/L). Parameter is the indicated metal, cyanide, or TRC. BPJ concentrations for TRC are usually 1.5 mg/L, maximum, from the Inorganic Chemicals Development Document (Phase I) pg. 183, EPA 440/1-82/007, associated with chlor-alkali production.

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- (*4) Same as (*2).
- (*5) Same as (*3).
- (*6) Production in 1000 lbs/day- Applicable to mass based effluent guidelines, these values indicate the amount of production in 1000 lbs/day.
- (*7) Flow to Treatment Plant Fraction- If a facility with mass-based guidelines is discharging a portion of their wastewater to a deepwell, POTW, or other source that is not the receiving water(s), the remaining fraction discharged to the surface receiving water(s) is placed in this column for mass-based limit calculation.
- (*8) Parameter flow in MGD- This flow is associated with the parameter specified in columns (*2) and (*3) and is used in determining flow based loadings.
- (*9) Parameter flow in MGD- This flow is associated with the parameter specified in columns (*4) and (*5) and is used in determining flow based loadings.
- (*10) Average guideline subcategory/subpart or source quantity allowance in lbs/day for specified parameter. For concentration-based guidelines/BPJ, this is determined by multiplying the concentration specified in column (*2) times the flow specified in column (*8) times the conversion factor 8.34. For mass-based guidelines the guideline process factor in column (*2) is multiplied times the daily production value specified in column (*6) and the flow to treatment plant fraction in column (*7) if process wastewater is being discharged to a deepwell, POTW, or other non-surface water means.
- (*11) Maximum guideline subcategory/subpart or source quantity allowance in lbs/day for specified parameter. For concentration-based guidelines/BPJ, this is determined by multiplying the concentration specified in column (*3) times the flow specified in column (*8) times the conversion factor 8.34. For mass-based guidelines the guideline process factor in column (*3) is multiplied times the daily production value specified in column (*6) and the flow to treatment plant fraction in column (*7) if process wastewater is being discharged to a deepwell, POTW, or other non-surface water means.
- (*12) Similar to column (*10). See description for (*10).
- (*13) Similar to column (*11). See description for (*11).

Table 4

Table 4 is a calculation summary table for Conventional, Non-Conventional, and Toxic limits. If there is one consolidated OCPSF metal bearing waste stream per metal and this is the only metal source, then the guideline concentrations in

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columns (*2) (Daily Average) and (*3) (Daily Maximum) are multiplied times the flow in column (*4) times the conversion factor of 8.34 to yield daily average and daily maximum guideline loadings in lbs/day in columns (*5) and (*6), respectively.

- (*1) Parameter- The parameters are organized into three groups, Conventional, Non-Conventional, and Metals and Cyanide.
- (*2) Average guideline/BPJ value- Guideline or BPJ value in terms of concentration, mg/L. If there are multiple sources/allocations for the listed metals/cyanide, these values will not be indicated in this column. Single or consolidated metal/cyanide bearing waste streams (OCPSF only) will have values indicated in this column. Values will not be indicated for the conventional and non-conventional pollutants listed.
- (*3) Maximum guideline/BPJ value- Guideline or BPJ value in terms of concentration, mg/L. If there are multiple sources/allocations for the listed metals/cyanide, these values will not be indicated in this column. Single or consolidated metal/cyanide bearing waste streams (OCPSF only) will have values indicated in this column. Values will not be indicated for the conventional and non-conventional pollutants listed.
- (*4) Process flow in MGD- Similar to columns (*2) and (*3), this column will be left blank unless there is one consolidated metal/cyanide bearing waste stream.
- (*5) Average Guideline/BPJ effluent limitation in lbs/day. Except for the metal/cyanide situation discussed in column (*2), these values are calculated in other tables and summarized in this column.
- (*6) Maximum Guideline/BPJ effluent limitation in lbs/day. Similar to column (*5).
- (*7) Average Tech Old in lbs/day- This column is utilized when an anti-backsliding concern (CWA 402(o), 40 CFR 122.44.1, LAC 33.IX.2361.L) is present. This would be indicated by significantly higher limits ($\approx 10\%$ or greater) calculated under guidelines than those previously established in the previous permit on a BPJ basis (now achievable technology, if the permittee is meeting the limits) before guideline issuance. If the previously issued permit (as applicable) contains limits for the parameter of concern and an anti-backsliding concern is present, the limits from the previously issued permit are placed in this column in lbs/day.
- (*8) Maximum Tech Old in lbs/day- Similar to (*7).
- (*9) Antiback, 0=no scr., 1=OldvsGL, 2=Old+GL- Anti-Backsliding screening switch. The default is set under section (*1) in Table 1. If a screen is conducted, a "1" will appear in this column. The more stringent permit limits will appear in columns (*10) and (*11). If the screen indicates that the previously issued permit limit utilizing BPJ-Tech is more

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stringent and an increase in production has occurred, the technology based limits can be recalculated by running the spreadsheet a second time using guidelines for the increase only. This will be indicated by a "2" in this column. The recalculated guideline limitations in columns (*4) and (*5) are subsequently added to the values in columns (*7) and (*8) yielding technology-based effluent limitations in columns (*10) and (*11). The values in this column can be changed on a row-by-row basis for site-specific screening situations.

- (*10) Average technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*5). When anti-backsliding screening is used, see discussion for column (*9).
- (*11) Maximum technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*6). When anti-backsliding screening is used, see discussion for column (*9).
- (*12) Average technology based effluent limit in mg/L- A concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*10). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD}} * 8.34$$
- (*13) Maximum technology based effluent limit in mg/L- Similar to column (*11), a concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*11). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD}} * 8.34$$

Table 5

Table 5 calculates the organic toxic technology effluent limitations based on BAT/NSPS established in the OCPSF guidelines, Subpart I or J as indicated. The column designations are very similar to those used for the summary table for Conventional pollutants, Non-Conventional pollutants, and Metals and Cyanide.

- (*1) Parameter. The parameters are organized into three groups, Volatile Compounds, Acid Compounds, and Base/Neutral Compounds.
- (*2) Average guideline value (BAT/NSPS) in terms of concentration in mg/L.
- (*3) Maximum guideline value (BAT/NSPS) in terms of concentration in mg/L.
- (*4) OCPSF process flow in MGD.

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- (*5) Average guideline limit in lbs/day- Calculated by multiplying the guideline concentration in column (*2) times the flow in column (*4) times the conversion factor of 8.34.
- (*6) Maximum guideline limit in lbs/day- Calculated by multiplying the guideline concentration in column (*3) times the flow in column (*4) times the conversion factor of 8.34. Similar to column (*5).
- (*7) Average Tech Old in lbs/day- This column is utilized when an anti-backsliding concern (CWA 402(o), 40 CFR 122.44.1, LAC 33.IX.2361.L) is present. This would be indicated by significantly higher limits ($\approx 10\%$ or greater) calculated under guidelines than those previously established in the previous permit on a BPJ basis (now achievable technology, if the permittee is meeting the limits) before guideline issuance. If the previously issued permit (as applicable) contains limits for the parameter of concern and an anti-backsliding concern is present, the limits from the previously issued permit are placed in this column in lbs/day.
- (*8) Maximum Tech Old in lbs/day- Similar to (*7).
- (*9) Antiback, 0=no scr., 1=OldvsGL, 2=Old+GL- Anti-Backsliding screening switch. The default is set under section (*1) in Table 1. If a screen is conducted, a "1" will appear in this column. The more stringent permit limits will appear in columns (*10) and (*11). If the screen indicates that the previously issued permit limit utilizing BPJ-Technology is more stringent and an increase in production has occurred, the technology based limits can be recalculated by running the spreadsheet a second time using guidelines for the increase only. This will be indicated by a "2" in this column. The recalculated guideline limitations in columns (*4) and (*5) are subsequently added to the values in columns (*7) and (*8) yielding technology-based effluent limitations in columns (*10) and (*11). The values in this column can be changed on a row-by-row basis for site-specific screening situations.
- (*10) Average technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*5). When anti-backsliding screening is used, see discussion for column (*9).
- (*11) Maximum technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*6). When anti-backsliding screening is used, see discussion for column (*9).
- (*12) Daily Average technology based effluent limit in mg/L- A concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*10). The formula is as follows:
- $$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD}} * 8.34$$

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- (*13) Daily Maximum technology based effluent limit in mg/L- Similar to column (*11), a concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*11). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

Modified Appendices A-1, A-2, & A-3

wqsmodn.wk4 Date: 08/02 Appendix B-1 Page 1
 Developer: Bruce Fielding Time: 01:52 PM
 Software: Lotus 4.0 LA0082511, AI6164
 Revision date: 02/14/05

Water Quality Screen for Westlake Petrochemicals LP, Ethylene Facility

Input variables:		Fact. [*1]	
Receiving Water Characteristics:		0.516037 Dilution:	Toxicity Dilution Series:
		ZID Fs = 0.033333	Biomonitoring dilution[*1]:0.036326
Receiving Water Name=	Calcasieu	Flows:	Dilution Series Factor: 0.75
Critical flow(Qr)cfs=[*1]	1476.898	2862 MZ Fs = 0.333333	
Harm. mean/avg tidal cfs=	4449.273	8622 Critical Qr (MGD)=	954.5192
Drinking Water=1	HHNPCR=2	Harm. Mean (MGD)=	2875.565
Marine, 1=y, 0=n	1	ZID Dilution =	0.035176
Rec. Water Hardness=	977.65	MZ Dilution =	0.003633
Rec. Water TSS=	10	HHnc Dilution=	0.000403
Fisch/Specific=1, Stream=0		HHc Dilution=	0.000403
Diffuser Ratio=		ZID Upstream =	27.42871
		MZ Upstream =	274.2871
Effluent Characteristics:		MZhhnc Upstream=	822.8614
Permittee=	Westlake Petrochemicals LP, Ethylene Facility		
Permit Number=	LA0082511, AI6164		
Facility flow (Qef),MGD=	1.16	MZhhc Upstream=	2478.935
		ZID Hardness=	---
Outfall Number =	001	Phase I&IIMZ Hardness=	---
Eff. data, 2=lbs/day	2	ZID TSS=	---
QBL, 2=lbs/day	1	MZ TSS=	---
Effluent Hardness=	N/A	Multipliers:	
Effluent TSS=	N/A	WLAa --> LTAA	0.32
WQBL ind. 0=y, 1=n		WLAc --> LTAc	0.53
Acute/Chr. ratio 0=n, 1=y	1	LTA a,c-->WQBL avg	1.31
Aquatic,acute only1=y,0=n		LTA a,c-->WQBL max	3.11
		LTA h --> WQBL max	2.38
		WQBL-limit/report	2.13
Page Numbering/Labeling		WLA Fraction	1
Appendix	Appendix B-1	WQBL Fraction	1
Page Numbers 1=y, 0=n	1	Conversions:	
Input Page # 1=y, 0=n	1	ug/L-->lbs/day Qef	0.009674
Fischer/Site Specific inputs:		ug/L-->lbs/day Qeo	0
Pipe=1, Canal=2, Specific=3		ug/L-->lbs/day Qr	12.31733
Pipe width, feet		lbs/day-->ug/L Qeo	103.3656
ZID plume dist., feet		lbs/day-->ug/L Qef	103.3656
MZ plume dist., feet		diss-->tot 1=y0=n	1
HHnc plume dist., feet		Cu diss->tot1=y0=n	1
HHc plume dist., feet		cfs-->MGD	0.6463
Fischer/site specific dilutions:		Receiving Stream:	
F/specific ZID Dilution =	---	Default Hardness=	25
F/specific MZ Dilution =	---	Default TSS=	10
F/specific HHnc Dilution=	---	99 Crit., 1=y, 0=n	1
F/specific HHc Dilution=	---		

Percent Effluent	
Dilution No. 1	4.843%
Dilution No. 2	3.6326%
Dilution No. 3	2.7244%
Dilution No. 4	2.0433%
Dilution No. 5	1.5325%

Partition Coefficients; Dissolved-->Total

METALS	MW
Total Arsenic	1
Total Cadmium	1
Chromium III	1
Chromium VI	1
Total Copper	1.138038
Total Lead	2.62181
Total Mercury	1
Total Nickel	1
Total Zinc	1.691831
Aquatic Life, Dissolved	
Metal Criteria, ug/L	

METALS	ACUTE	CHRONIC
Arsenic	69	36
Cadmium	45.34628	9.94
Chromium III	515	103
Chromium VI	1092.3	49.65
Copper	3.6271	3.6271
Lead	209.22	8.0835
Mercury	1.785	0.025
Nickel	74.25	8.217
Zinc	89.87	81.356

Site Specific Multiplier Values:

CV =	---
N =	---
WLAa --> LTAA	---
WLAc --> LTAc	---
LTA a,c-->WQBL avg	---
LTA a,c-->WQBL max	---
LTA h --> WQBL max	---

[*1] Critical flow and avg. tidal flow have been adjusted for toxics water quality calculations to account for commingled flows with Westlake Styrene, LA0087157, and Westlake Petrochemicals III, LA0103004. The factor, 0.516, was determined by taking the flow of the Ethylene (1.16 MGD) and Petrochemicals III (0.2336 MGD) Plants and dividing by the total of the three facilities. Westlake Petrochemicals III is responsible for the biomonitoring of all 3 facilities. Flow was obtained from the most recent applications submitted (Max 30-day avg. flow).

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Westlake Petrochemicals LP, Ethylene Facility

LA0082511, AI6164

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	CuEffluent		Effluent	MQLEffluent		95th %	Numerical Criteria		HH	
Parameters	Instream	/Tech	/Tech	1=No	95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)	0=95 %	Non-Tech		MW	MW	Indicator	
	ug/L	lbs/day	lbs/day	ug/L	lbs/day		ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)		0.06		5	0	0.1278	580	290	50	
3-Chlorophenol				10						
4-Chlorophenol				10			535	268		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			69	36		
Total Cadmium				1			45.34628	9.94		
Chromium III				10			515	103		
Chromium VI				10			1092.3	49.65		
Total Copper [*1]	0.063			10	0	0.13419	4.127779	4.127779		
Total Lead	0.067			5	0	0.14271	548.5351	21.1934		
Total Mercury [*1]	0.001			0.2	0	0.00213	1.785	0.025		
Total Nickel	0.178			5	0	0.37914	74.25	8.217		
Total Zinc	0.474			20	0	1.00962	152.0448	137.6406		
Total Cyanide				20			1		12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-005					7.2E-007	C
VOLATILE COMPOUNDS										
Benzene	0.206131	0.757672		10	1		2700	1350	12.5	C
Bromoform	0.477			10	0	1.01601	1790	895	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride	0.10028	0.211703		10	1		15000	7500	1.2	C
Chloroform	0.116994	0.256272		10	1		8150	4075	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane	0.378836	1.175506		10	1		11300	5650	6.8	C
1,1-Dichloroethylene	0.089138	0.139278		10	1		22400	11200	0.58	C
1,3-Dichloropropylene	0.161562	0.245129		10	1		79	39.5	162.79	
Ethylbenzene	0.178276	0.601681		10	1		8760	4380	8100	
Methyl Chloride	0.479116	1.058513		50	1		27000	13500		
Methylene Chloride	0.222845	0.49583		20	1		25600	12800	87	C
1,1,2,2-Tetrachloro-										
ethane				10			902	451	1.8	C

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Westlake Petrochemicals LP, Ethylene Facility
 LA0082511, AI6164

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAA	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	Phase
NONCONVENTIONAL												
Total Phenols (4AAP)	16488.65	79833.26	123996.8	5276.369	42311.63	123996.8	5276.369	6912.043	16409.51	66.86987	158.7521	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	15209.36	73776.95	---	4866.995	39101.78	---	4866.995	6375.764	15136.36	61.68169	146.4352	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoc-	---	---	---	---	---	---	---	---	---	---	---	no
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-	---	---	---	---	---	---	---	---	---	---	---	no
oxy) propionic acid	---	---	---	---	---	---	---	---	---	---	---	no
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	1961.581	9910.336	---	627.706	5252.478	---	627.706	822.2948	1952.166	7.955209	18.88603	no
Total Cadmium	1289.136	2736.354	---	412.5236	1450.268	---	412.5236	540.406	1282.948	5.228103	12.41176	no
Chromium III	14640.79	28354.57	---	4685.052	15027.92	---	4685.052	6137.418	14570.51	59.37583	140.961	no
Chromium VI	31052.68	13668.01	---	9936.858	7244.043	---	7244.043	9489.696	22528.97	91.80712	217.9543	no
Total Copper [*1]	---	---	---	---	---	---	---	---	---	1.29	1.29	yes
Total Lead	15594.15	5834.271	---	4990.127	3092.163	---	3092.163	4050.734	9616.628	39.18842	93.03511	no
Total Mercury [*1]	---	---	---	---	---	---	---	---	---	0.0089	0.0089	yes
Total Nickel	2110.832	2262.034	---	675.4662	1198.878	---	675.4662	884.8607	2100.7	8.560497	20.32301	no
Total Zinc	4322.439	37890.68	---	1383.181	20082.06	---	1383.181	1811.967	4301.692	17.52969	41.61628	no
Total Cyanide	28.42871	---	3.2E+007	9.097188	---	3.2E+007	9.097188	11.91732	28.29225	0.115293	0.273711	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.001786	---	---	0.001786	0.001786	0.001786	0.00425	0.000017	0.000041	no
VOLATILE COMPOUNDS												
Benzene	76757.52	371637.6	30999.19	24562.41	196967.9	30999.19	24562.41	32176.75	76389.09	311.2908	739.0186	no
Bromoform	50887.39	246382	86053.76	16283.97	130582.4	86053.76	16283.97	21332	50643.13	206.3743	489.9419	no
Bromodichloromethane	---	---	8183.787	---	---	8183.787	8183.787	8183.787	19477.41	79.17323	188.4323	no
Carbon Tetrachloride	426430.7	2064653	2975.923	136457.8	1094266	2975.923	2975.923	2975.923	7082.696	28.79027	68.52083	no
Chloroform	231694	1121795	173595.5	74142.08	594551.4	173595.5	74142.08	97126.13	230581.9	939.637	2230.741	no
Dibromochloromethane	---	---	12598.07	---	---	12598.07	12598.07	12598.07	29983.41	121.8788	290.0715	no
1,2-Dichloroethane	321244.4	1555372	16863.56	102798.2	824347.3	16863.56	16863.56	16863.56	40135.28	163.1448	388.2847	no
1,1-Dichloroethylene	636803.1	3083216	1438.363	203777	1634104	1438.363	1438.363	1438.363	3423.303	13.91529	33.1184	no
1,3-Dichloropropylene	2245.868	10873.84	403708.7	718.6778	5763.136	403708.7	718.6778	941.468	2235.088	9.108138	21.62314	no
Ethylbenzene	249035.5	1205758	2E+007	79691.37	639051.5	2E+007	79691.37	104395.7	247840.1	1009.966	2397.705	no
Methyl Chloride	767575.2	3716376	---	245624.1	1969679	---	245624.1	321767.5	763890.9	3112.908	7390.186	no
Methylene Chloride	727775	3523675	215754.4	232888	1867548	215754.4	215754.4	215754.4	513495.4	2087.294	4967.76	no
1,1,2,2-Tetrachloro-	---	---	---	---	---	---	---	---	---	---	---	---
ethane	25642.7	124154.5	4463.884	8205.663	65801.88	4463.884	4463.884	4463.884	10624.04	43.1854	102.7812	no

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	
Toxic Parameters	CuEffluent Instream Conc. ug/L	Effluent /Tech (Avg) lbs/day	Effluent /Tech (Max) lbs/day	MQLEffluent 1=No 95% 0=95 % ug/L	95th % estimate Non-Tech lbs/day		Numerical Criteria Acute MW ug/L		Chronic MW ug/L	HHNDW ug/L	HH Carcinogen Indicator *C*
VOLATILE COMPOUNDS (cont'd)											
Tetrachloroethylene	0.122565	0.311983		10	1		1020		510	2.5	C
Toluene	0.144849	0.44569		10	1		950		475	46200	
1,1,1-Trichloroethane	0.116994	0.30084		10	1		3120		1560		
1,1,2-Trichloroethane	0.116994	0.30084		10	1					6.9	C
Trichloroethylene	0.116994	0.30084		10	1		200		100	21	C
Vinyl Chloride	0.579396	1.49306		10	1					35.8	C
ACID COMPOUNDS											
2-Chlorophenol	0.172705	0.54597		10	1					126.4	
2,4-Dichlorophenol	0.217274	0.623965		10	1					232.6	
BASE NEUTRAL COMPOUNDS											
Benzidine				50						0.00017	C
Hexachlorobenzene	0.083567	0.155991		10	1					0.00025	C
Hexachlorabutadiene	0.111422	0.272985		10	1		1.6	0.32		0.11	C
PESTICIDES											
Aldrin				0.05			1.3			0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05			0.16			0.2	C
Chlordane				0.2			0.09	0.004		0.00019	C
4,4'-DDT				0.1			0.13	0.001		0.00019	C
4,4'-DDE				0.1			0.7	0.14		0.00019	C
4,4'-DDD				0.1			1.25	0.25		0.00027	C
Dieldrin				0.1			0.71	0.0019		0.00005	C
Endosulfan				0.1			0.034	0.0087		0.64	
Endrin				0.1			0.037	0.0023		0.26	
Heptachlor				0.05			0.053	0.0036		0.00007	C
Toxaphene				5			0.21	0.0002		0.00024	C
Other Parameters:											
Fecal Col.(col/100ml)											
Chlorine							13		7.5		
Ammonia									4000		
Chlorides											
Sulfates											
TDS											
Benzo-a-anthracene [*1]	0.122565	0.328696			1						
Benzo-a-pyrene [*1]	0.128136	0.339838			1						
[*1] TMDL Parameters, effective February 1, 2007											

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Westlake Petrochemicals LP, Ethylene Facility

LA0082511, AI6164

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAA	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	Phase
Tetrachloroethylene	28997.29	140396.4	6199.839	9279.132	74410.11	6199.839	6199.839	6199.839	14755.62	59.97972	142.7517	no
Toluene	27007.28	130761.4	1.1E+008	8642.328	69303.53	1.1E+008	8642.328	11321.45	26877.64	109.5282	260.0251	no
1,1,1-Trichloroethane	88697.58	429447.9	---	28383.23	227607.4	---	28383.23	37182.03	88271.83	359.7138	853.977	no
1,1,2-Trichloroethane	---	---	17111.55	---	---	17111.55	17111.55	17111.55	40725.5	165.544	393.9948	no
Trichloroethylene	5685.742	27528.71	52078.64	1819.438	14590.22	52078.64	1819.438	2383.463	5658.451	23.05858	54.74212	no
Vinyl Chloride	---	---	88781.69	---	---	88781.69	88781.69	88781.69	211300.4	858.9096	2044.205	no
ACID COMPOUNDS												
2-Chlorophenol	---	---	313463.8	---	---	313463.8	313463.8	313463.8	746043.9	3032.575	7217.528	no
2,4-Dichlorophenol	---	---	576833	---	---	576833	576833	576833	1372863	5580.513	13281.62	no
BASE NEUTRAL COMPOUNDS												
Benzidine	---	---	0.421589	---	---	0.421589	0.421589	0.421589	1.003382	0.004079	0.009707	no
Hexachlorobenzene	---	---	0.619984	---	---	0.619984	0.619984	0.619984	1.475562	0.005998	0.014275	yes
Hexachlorabutadiene	45.48594	88.09188	272.7929	14.5555	46.6887	272.7929	14.5555	19.06771	45.26761	0.184469	0.437937	no
PESTICIDES												
Aldrin	36.95733	---	0.991974	11.82634	---	0.991974	0.991974	0.991974	2.360899	0.009597	0.02284	no
Hexachlorocyclohexane (gamma BHC, Lindane)	4.548594	---	495.9871	1.45555	---	495.9871	1.45555	1.906771	4.526761	0.018447	0.043794	no
Chlordane	2.558584	1.101148	0.471188	0.818747	0.583609	0.471188	0.471188	0.471188	1.121427	0.004558	0.010849	no
4,4'-DDT	3.695733	0.275287	0.471188	1.182634	0.145902	0.471188	0.145902	0.191132	0.453756	0.001849	0.00439	no
4,4'-DDE	19.9001	38.5402	0.471188	6.368031	20.4263	0.471188	0.471188	0.471188	1.121427	0.004558	0.010849	no
4,4'-DDD	35.53589	68.82178	0.669583	11.37148	36.47554	0.669583	0.669583	0.669583	1.593607	0.006478	0.015417	no
Dieldrin	20.18439	0.523046	0.123997	6.459003	0.277214	0.123997	0.123997	0.123997	0.295112	0.0012	0.002855	no
Endosulfan	0.966576	2.394998	1587.159	0.309304	1.269349	1587.159	0.309304	0.405189	0.961937	0.00392	0.009306	no
Endrin	1.051862	0.63316	644.7832	0.336596	0.335575	644.7832	0.335575	0.439603	1.043638	0.004253	0.010097	no
Heptachlor	1.506722	0.991034	0.173595	0.482151	0.525248	0.173595	0.173595	0.173595	0.413157	0.001679	0.003997	no
Toxaphene	5.97003	0.055057	0.595185	1.910409	0.02918	0.595185	0.02918	0.038226	0.090751	0.00037	0.000878	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	369.5733	2064.653	---	118.2634	1094.266	---	118.2634	154.9251	367.7993	1.498807	3.558238	no
Ammonia	---	1101148	---	---	583608.7	---	583608.7	764527.4	1815023	7396.344	17559.26	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
Benzo-a-anthracene (*1)	---	---	---	---	---	---	---	---	---	0.087	0.087	yes
Benzo-a-pyrene (*1)	---	---	---	---	---	---	---	---	---	0.087	0.087	yes

wqsmoan.wk4 Date: 08/02 Appendix B-2 Page 1
 Developer: Bruce Fielding Time: 01:57 PM
 Software: Lotus 4.0 LA0082511, AI6164
 Revision date: 02/14/05

Water Quality Screen for Westlake Petrochemicals LP, Ethylene Facility

Input variables: Fact.[*1]

Receiving Water Characteristics: 0.516037 Dilution:		Toxicity Dilution Series:	
	ZID Fs = 0.033333	Biomonitoring dilution[*1]:0.039543	
Receiving Water Name= Calcasieu	Flows:	Dilution Series Factor: 0.75	
Critical flow(Qr)cfs=[*1]1476.898	2862 MZ Fs = 0.333333		
Harm. mean/avg tidal cfs=4449.273	8622 Critical Qr (MGD)=954.5192	Percent Effluent	
Drinking Water=1 HHNPCR=2	Harm. Mean (MGD)= 2875.565	Dilution No. 1	5.272%
Marine, 1=y, 0=n	ZID Dilution = 0.040989	Dilution No. 2	3.9543%
Rec. Water Hardness= 977.65	MZ Dilution = 0.004256	Dilution No. 3	2.9657%
Rec. Water TSS= 10	HHnc Dilution= 0.000473	Dilution No. 4	2.2243%
Fisch/Specific=1,Stream=0	HHc Dilution= 0.000473	Dilution No. 5	1.6682%
Diffuser Ratio=	ZID Upstream = 23.3968		
	MZ Upstream = 233.968		
Effluent Characteristics:	MZhhnc Upstream= 701.9039	Partition Coefficients; Dissolved-->Total	
Permittee= Westlake Petrochemicals LP, Ethylene Facility		METALS MW	
Permit Number= LA0082511, AI6164		Total Arsenic	1
Facility flow (Qef),MGD= 1.3599	MZhhc Upstream= 2114.542	Total Cadmium	1
	ZID Hardness= ---	Chromium III	1
		Chromium VI	1
Outfall Number = 001 PhaseIII	MZ Hardness= ---	Total Copper	1.138038
Eff. data, 2=lbs/day	ZID TSS= ---	Total Lead	2.62181
WQL, 2=lbs/day	MZ TSS= ---	Total Mercury	1
Effluent Hardness= N/A	Multipliers:	Total Nickel	1
Effluent TSS= N/A	WLAa --> LTAA 0.32	Total Zinc	1.691831
WQBL ind. 0=y, 1=n	WLAc --> LTAC 0.53	Aquatic Life, Dissolved	
Acute/Chr. ratio 0=n, 1=y	LTA a,c-->WQBL avg 1.31	Metal Criteria, ug/L	
Aquatic,acute only1=y,0=n	LTA a,c-->WQBL max 3.11	METALS ACUTE CHRONIC	
	LTA h --> WQBL max 2.38	Arsenic	69 36
	WQBL-limit/report 2.13	Cadmium	45.34628 9.94
Page Numbering/Labeling	WLA Fraction 1	Chromium III	515 103
Appendix Appendix B-2	WQBL Fraction 1	Chromium VI	1092.3 49.65
Page Numbers 1=y, 0=n	Conversions:	Copper	3.6271 3.6271
Input Page # 1=y, 0=n	ug/L-->lbs/day Qef0.011342	Lead	209.22 8.0835
Fischer/Site Specific inputs:	ug/L-->lbs/day Qeo 0	Mercury	1.785 0.025
Pipe=1,Canal=2,Specific=3	ug/L-->lbs/day Qr 12.31733	Nickel	74.25 8.217
Pipe width, feet	lbs/day-->ug/L Qeo88.17125	Zinc	89.87 81.356
ZID plume dist., feet	lbs/day-->ug/L Qef88.17125	Site Specific Multiplier Values:	
MZ plume dist., feet	diss-->tot 1=y0=n 1	CV =	---
HHnc plume dist., feet	Cu diss-->tot1=y0=n 1	N =	---
HHc plume dist., feet	cfs-->MGD 0.6463	WLAa --> LTAA	---
Fischer/site specific dilutions:	Receiving Stream:	WLAc --> LTAC	---
F/specific ZID Dilution = ---	Default Hardness= 25	LTA a,c-->WQBL avg	---
F/specific MZ Dilution = ---	Default TSS= 10	LTA a,c-->WQBL max	---
F/specific HHnc Dilution= ---	99 Crit., 1=y, 0=n 1	LTA h --> WQBL max	---
F/specific HHc Dilution= ---			

[*1] Critical flow and avg. tidal flow have been adjusted for toxics water quality calculations to account for commingled flows with Westlake Styrene, LA0087157, and Westlake Petrochemicals III, LA0103004. The factor, 0.516, was determined by taking the flow of the Ethylene (1.16 MGD) and Petrochemicals III (0.2336 MGD) Plants and dividing by the total of the three facilities. Westlake Petrochemicals III is responsible for the biomonitoring of all 3 facilities. Flow was obtained from the most recent applications submitted (Max 30-day avg. flow).

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Westlake Petrochemicals LP, Ethylene Facility

LA0082511, AI6164

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	CuEffluent		Effluent	MQLEffluent		95th %	Numerical Criteria		HH	
Parameters	Instream	/Tech	/Tech	1-No	95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)	0-95 %	Non-Tech		MW	MW		Indicator
	ug/L	lbs/day	lbs/day	ug/L	lbs/day		ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)		0.06		5	0	0.1278	580	290	50	
3-Chlorophenol				10						
4-Chlorophenol				10			535	268		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			69	36		
Total Cadmium				1			45.34628	9.94		
Chromium III				10			515	103		
Chromium VI				10			1092.3	49.65		
Total Copper [*1]				10			4.127779	4.127779		
Total Lead		0.067		5	0	0.14271	548.5351	21.1934		
Total Mercury [*1]				0.2			1.785	0.025		
Total Nickel		0.178		5	0	0.37914	74.25	8.217		
Total Zinc		0.474		20	0	1.00962	152.0448	137.6406		
Total Cyanide				20			1		12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-005					7.2E-007	C
VOLATILE COMPOUNDS										
Benzene		0.232793	0.855671	10	1		2700	1350	12.5	C
Bromoform		0.477		10	0	1.01601	1790	895	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride		0.113251	0.239084	10	1		15000	7500	1.2	C
Chloroform		0.132126	0.289418	10	1		8150	4075	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane		0.427835	1.327548	10	1		11300	5650	6.8	C
1,1-Dichloroethylene		0.100667	0.157292	10	1		22400	11200	0.58	C
1,3-Dichloropropylene		0.182459	0.276835	10	1		79	39.5	162.79	
Ethylbenzene		0.201334	0.679503	10	1		8760	4380	8100	
Methyl Chloride		0.541086	1.195422	50	1		27000	13500		
Methylene Chloride		0.251668	0.559961	20	1		25600	12800	87	C
1,1,2,2-Tetrachloro-										
ethane				10			902	451	1.8	C

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Westlake Petrochemicals LP, Ethylene Facility
LA0082511, AI6164

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAA	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A, C, HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	Phase
NONCONVENTIONAL												
Total Phenols (4AAP)	14150.14	68140.71	105777.1	4528.046	36114.58	105777.1	4528.046	5931.74	14082.22	67.27522	159.7145	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	13052.29	62971.42	---	4176.732	33374.85	---	4176.732	5471.519	12989.64	62.05559	147.3228	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoc-												
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-												
oxy) propionic acid												
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	1683.379	8458.847	---	538.6813	4483.189	---	538.6813	705.6725	1675.299	8.003431	19.00051	no
Total Cadmium	1106.304	2335.582	---	354.0173	1237.858	---	354.0173	463.7627	1100.994	5.259795	12.48699	no
Chromium III	12564.35	24201.7	---	4020.592	12826.9	---	4020.592	5266.976	12504.04	59.73576	141.8154	no
Chromium VI	26648.62	11666.16	---	8527.559	6183.065	---	6183.065	8099.815	19229.33	91.86459	218.0907	no
Total Copper [*1]	---	---	---	---	---	---	---	---	---	1.29	1.29	yes
Total Lead	13382.5	4979.771	---	4282.4	2639.279	---	2639.279	3457.455	8208.156	39.21295	93.09335	no
Total Mercury [*1]	---	---	---	---	---	---	---	---	---	0.0089	0.0089	yes
Total Nickel	1811.462	1930.732	---	579.6679	1023.288	---	579.6679	759.365	1802.767	8.612388	20.4462	no
Total Zinc	3709.408	32341.13	---	1187.01	17140.8	---	1187.01	1554.984	3691.602	17.63595	41.86855	no
Total Cyanide	24.3968	---	2.7E+007	7.806975	---	2.7E+007	7.806975	10.22714	24.27969	0.115992	0.27537	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.001523	---	---	0.001523	0.001523	0.001523	0.003625	0.000017	0.000041	no
VOLATILE COMPOUNDS												
Benzene	65871.36	317206.8	26444.27	21078.83	168119.6	26444.27	21078.83	27613.27	65555.17	313.1777	743.4983	no
Bromoform	43670.27	210296.3	73409.29	13974.49	111457.1	73409.29	13974.49	18306.58	43460.65	207.6252	492.9118	no
Bromodichloromethane	---	---	6981.287	---	---	6981.287	6981.287	6981.287	16615.46	79.17873	188.4454	no
Carbon Tetrachloride	365952	1762260	2538.65	117104.6	933997.7	2538.65	2538.65	2538.65	6041.987	28.79227	68.52559	no
Chloroform	198833.9	957494.5	148087.9	63626.85	507472.1	148087.9	63626.85	83351.17	197879.5	945.3328	2244.263	no
Dibromochloromethane	---	---	10746.95	---	---	10746.95	10746.95	10746.95	25577.74	121.8873	290.0917	no
1,2-Dichloroethane	275683.8	1327569	14385.68	88218.82	703611.6	14385.68	14385.68	14385.68	34237.93	163.1562	388.3117	no
1,1-Dichloroethylene	546488.3	2631641	1227.014	174876.2	1394770	1227.014	1227.014	1227.014	2920.294	13.91626	33.1207	no
1,3-Dichloropropylene	1927.347	9281.235	344389	616.7511	4919.055	344389	616.7511	807.9439	1918.096	9.163349	21.75421	no
Ethylbenzene	213716	1029160	1.7E+007	68389.1	545454.7	1.7E+007	68389.1	89589.73	212690.1	1016.088	2412.239	no
Methyl Chloride	658713.6	3172068	---	210788.3	1681196	---	210788.3	276132.7	655551.7	3131.777	7434.983	no
Methylene Chloride	624558	3007590	184052.1	199858.6	1594023	184052.1	184052.1	184052.1	438044	2087.439	4968.105	no
1,1,2,2-Tetrachloro-												
ethane	22005.91	105970.6	3807.975	7041.892	56164.4	3807.975	3807.975	3807.975	9062.98	43.1884	102.7884	no

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Westlake Petrochemicals LP, Ethylene Facility

LA0082511, AI6164

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAC	WLAh	LTAa	LTAC	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	Phase
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	24884.73	119833.7	5288.854	7963.115	63511.85	5288.854	5288.854	5288.854	12587.47	59.98389	142.7617	no
Toluene	23176.96	111609.8	9.8E+007	7416.627	59153.19	9.8E+007	7416.627	9715.781	23065.71	110.1922	261.6013	no
1,1,1-Trichloroethane	76118.01	366550.1	---	24357.76	194271.5	---	24357.76	31908.67	75752.64	361.8943	859.1536	no
1,1,2-Trichloroethane	---	---	14597.24	---	---	14597.24	14597.24	14597.24	34741.42	165.5555	394.0222	no
Trichloroethylene	4879.36	23496.8	44426.37	1561.395	12453.3	44426.37	1561.395	2045.428	4855.939	23.19835	55.07395	no
Vinyl Chloride	---	---	75736.39	---	---	75736.39	75736.39	75736.39	180252.6	858.9693	2044.347	no
ACID COMPOUNDS												
2-Chlorophenol	---	---	267404.5	---	---	267404.5	267404.5	267404.5	636422.6	3032.785	7218.029	no
2,4-Dichlorophenol	---	---	492075	---	---	492075	492075	492075	1171138	5580.901	13282.54	no
BASE NEUTRAL COMPOUNDS												
Benzidine	---	---	0.359642	---	---	0.359642	0.359642	0.359642	0.855948	0.004079	0.009708	no
Hexachlorobenzene	---	---	0.528885	---	---	0.528885	0.528885	0.528885	1.258747	0.005998	0.014276	yes
Hexachlorobutadiene	39.03488	75.18975	232.7096	12.49116	39.85057	232.7096	12.49116	16.36342	38.84751	0.185587	0.440592	no
PESTICIDES												
Aldrin	31.71584	---	0.846217	10.14907	---	0.846217	0.846217	0.846217	2.013996	0.009597	0.022842	no
Hexachlorocyclohexane (gamma BHC, Lindane)	3.903488	---	423.1083	1.249116	---	423.1083	1.249116	1.636342	3.884751	0.018559	0.044059	no
Chlordane	2.195712	0.939872	0.401953	0.702628	0.498132	0.401953	0.401953	0.401953	0.956648	0.004559	0.01085	no
4,4'-DDT	3.171584	0.234968	0.401953	1.014907	0.124533	0.401953	0.124533	0.163138	0.387298	0.00185	0.004393	no
4,4'-DDE	17.07776	32.89552	0.401953	5.464883	17.43462	0.401953	0.401953	0.401953	0.956648	0.004559	0.01085	no
4,4'-DDD	30.496	58.742	0.571196	9.758719	31.13326	0.571196	0.571196	0.571196	1.359447	0.006478	0.015418	no
Dieldrin	17.32173	0.446439	0.105777	5.542953	0.236613	0.105777	0.105777	0.105777	0.251749	0.0012	0.002855	no
Endosulfan	0.829491	2.044221	1353.947	0.265437	1.083437	1353.947	0.265437	0.347723	0.82551	0.003944	0.009363	no
Endrin	0.902682	0.540426	550.0408	0.288858	0.286426	550.0408	0.286426	0.375218	0.890785	0.004256	0.010103	no
Heptachlor	1.29303	0.845885	0.148088	0.41377	0.448319	0.148088	0.148088	0.148088	0.352449	0.00168	0.003997	no
Toxaphene	5.123328	0.046994	0.50773	1.639465	0.024907	0.50773	0.024907	0.032628	0.07746	0.00037	0.000879	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	317.1584	1762.26	---	101.4907	933.9977	---	101.4907	132.9528	315.636	1.507893	3.579807	no
Ammonia	---	939871.9	---	---	498132.1	---	498132.1	652553.1	1549191	7400.974	17570.25	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
Benzo-a-anthracene [*1]	---	---	---	---	---	---	---	---	---	0.087	0.087	yes
Benzo-a-pyrene [*1]	---	---	---	---	---	---	---	---	---	0.087	0.087	yes

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Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Calcasieu River
Critical Flow, Qrc (cfs): 2862
Harmonic Mean Flow, Qrh (cfs): 8622
Segment No.: 030301
Receiving Stream Hardness (mg/L): 977.65
Receiving Stream TSS (mg/L): 10
MZ Stream Factor, Fs: 1/3
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Westlake Petrochemicals Corp
Facility flow, Qe (MGD): Phases I and II - 1.16
Phase III - 1.3599
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0082511

Variable Definition:

Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow, MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Q_e}{(Q_{rc} \times 0.6463 \times F_s + Q_e)}$$

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$$WLA_{a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

Discharge from a canal:

Critical

$$\text{Dilution} = \frac{(2.8) Pw \pi^{1/2}}{Pf}$$

Critical

$$\text{Dilution} = \frac{(2.38) (Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu) Pf}{(2.8) Pw \pi^{1/2}}$$

$$WLA = \frac{(Cr-Cu) Pf^{1/2}}{2.38 Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA_{a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA_{a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

Discharge from a canal:

Critical

$$\text{Dilution} = \frac{(2.8) Pw \pi^{1/2}}{Pf}$$

Critical

$$\text{Dilution} = \frac{(2.38) (Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu) Pf^*}{(2.8) Pw \pi^{1/2}}$$

$$WLA = \frac{(Cr-Cu) Pf^{1/2*}}{2.38 Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

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If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr - Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:

$$LTAA = WLAa \times 0.32$$

$$LTAc = WLAc \times 0.53$$

$$LTAh = WLAh$$

WQBL Calculations:

Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:

$$\text{Daily Maximum} = \text{Min}(LTAA, LTAc) \times 3.11$$

$$\text{Monthly Average} = \text{Min}(LTAc, LTAh) \times 1.31$$

If human health LTA is more limiting:

$$\text{Daily Maximum} = LTAh \times 2.38$$

$$\text{Monthly Average} = LTAh$$

Mass Balance Formulas:

$$\text{mass (lbs/day)} : (\text{ug/L}) \times 1/1000 \times (\text{flow, MGD}) \times 8.34 = \text{lbs/day}$$

$$\text{concentration(ug/L)} : \frac{\text{lbs/day}}{(\text{flow, MGD}) \times 8.34 \times 1/1000} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

- (*1) Parameter being screened.
- (*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
- (*3) Monthly average effluent or technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the

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waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

- (*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.
- (*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.
- (*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

<u>Metal</u>	<u>Formula</u>
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

<u>Metal</u>	<u>Multiplier</u>
Arsenic	$1 + 0.48 \times \text{TSS}^{-0.73} \times \text{TSS}$
Cadmium	$1 + 4.00 \times \text{TSS}^{-1.13} \times \text{TSS}$
Chromium III	$1 + 3.36 \times \text{TSS}^{-0.93} \times \text{TSS}$
Copper	$1 + 1.04 \times \text{TSS}^{-0.74} \times \text{TSS}$
Lead	$1 + 2.80 \times \text{TSS}^{-0.80} \times \text{TSS}$
Mercury	$1 + 2.90 \times \text{TSS}^{-1.14} \times \text{TSS}$
Nickel	$1 + 0.49 \times \text{TSS}^{-0.57} \times \text{TSS}$
Zinc	$1 + 1.25 \times \text{TSS}^{-0.70} \times \text{TSS}$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

<u>Metal</u>	<u>Multiplier</u>
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Copper	$1 + (10^{4.86} \times \text{TSS}^{-0.72} \times \text{TSS}) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times \text{TSS}^{-0.85} \times \text{TSS}) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times \text{TSS}^{-0.52} \times \text{TSS}) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

- (*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness dependent criteria:

<u>Metal</u>	<u>Formula</u>
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

- (*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.
- (*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.
- (*12) Wasteload Allocation for acute aquatic criteria (WLAA). Dilution type WLAA is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAA formulas for streams:

$$\text{WLAA} = (\text{Cr}/\text{Dilution Factor}) - \frac{(\text{Fs} \times \text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Dilution WLAA formulas for static water bodies:

$$\text{WLAA} = (\text{Cr} - \text{Cu})/\text{Dilution Factor}$$

Cr represents aquatic acute numerical criteria from column (*8).

If Cu data is unavailable or inadequate, assume Cu=0.

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If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L. Dilution WLAc formula:

$$WLAc = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:

$$WLAc = (Cr-Cu)/Dilution\ Factor)$$

Cr represents aquatic chronic numerical criteria from column (*9).

If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/Dilution\ Factor) - \frac{(Fs \times Qrc, Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:

$$WLAh = (Cr-Cu)/Dilution\ Factor)$$

Cr represents human health numerical criteria from column (*10).

If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*15) Long Term Average for aquatic numerical criteria (LTAA). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. $WLAa \times 0.32 = LTAA$.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. $WLAc \times 0.53 = LTAc$.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

- (*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. $WLAh \times 1 = LTAh$.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

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- (*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.
- (*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{monthly average}}$). If human health criteria was the most limiting criteria then $LTA_{\text{HH}} = WQBL_{\text{monthly average}}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.
- (*20) End of pipe Water Quality Based Limit (WQBL) daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{\text{limiting aquatic}} \times 3.11 = WQBL_{\text{daily max}}$). If human health criteria was the most limiting criteria then $LTA_{\text{HH}} \times 2.38$ to determine the daily maximum WQBL ($LTA_{\text{limiting aquatic}} \times 2.38 = WQBL_{\text{daily max}}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.
- (*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. $\text{Monthly average WQBL, ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{monthly average WQBL, lbs/day}$.
- (*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. $\text{Daily maximum WQBL, ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{daily maximum WQBL, lbs/day}$.
- (*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.